LAKE ONTARIO MARITIME CULTURAL LANDSCAPE

A Dissertation

by

BENJAMIN LOUIS FORD

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2009

Major Subject: Anthropology

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Approved by:

Chair of Committee,	Kevin Crisman
Committee Members,	Michael Alvard
	Donny Hamilton
	Jonathan Smith
Head of Department,	Donny Hamilton

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ABSTRACT

Lake Ontario Maritime Cultural Landscape.
(August 2009)
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Chair of Advisory Committee: Dr. Kevin Crisman

The goal of the Lake Ontario Maritime Cultural Landscape project was to investigate the nature and distribution of archaeological sites along the northeast shoreline of Lake Ontario while examining the environmental, political, and cultural factors that influenced the position of these sites. The primary method of investigation was a combined archaeological and historical survey of the shoreline within seven 1-km square areas. The archaeological component of the survey covered both the terrestrial and submerged portions of the shore through marine remote sensing (side-scan sonar and magnetometer), diving surveys, pedestrian surveys, and informant interviews.

A total of 39 sites and 51 isolated finds were identified or further analyzed as a result of this project. These sites ranged from the Middle Archaic period (ca. 5500–2500 B.C.) through the 19th century and included habitation, military, transportation, and recreational sites. Analysis of these findings was conducted at two scales: the individual survey area and Lake Ontario as a whole. By treating each survey area as a distinct landscape, it was possible to discuss how various cultures and groups used each space and to identify instances of both dynamism and continuity in the landscapes. Results of these analyses included the continuous occupation of several locations from pre-Contact times to the present, varying uses of the same environment in response to political and economic shifts, the formation of communities around transportation nodes, and recurring settlement patterns. The survey data was also combined to explore regional-scale trends that manifest themselves in the historical Lake Ontario littoral landscape

including ephemeral landscapes, permeable boundaries, danger in the lake, and factors of change.

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The residents of Wilson Bay, Sherwins Bay, Wolf Island, Parrotts Bay, Storrs Point, Carleton Island, and Long Carrying Place were wonderful hosts during the survey work. Residents gave freely of their time and opened their homes and docks to the survey crew. Several individuals and families deserve special mention because of the help and support that they gave to the project: James Ellinger, Richard Guga, Doris and Lorne Hart, Bruce Horne, John Keegan, Ken Keyes, the MacDonald Family, Charles Millar, the McRae Family, John O'Shea, the OYong Family, the Pullus Family, Bruce Rippeteau, the Rose Family, Linda Thomas, John Weatherall, the Whelpleys, Vincent Williams, and the Wolfe Island Tourism and Business Association.

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TABLE OF CONTENTS

LIST OF FIGURES

FIGURE Page

FIGURE Page

FIGURE Page

FIGURE Page

FIGURE Page

FIGURE Page

LIST OF TABLES

CHAPTER I
INTRODUCTION

> Over the past decades some remarkable misapprehensions and presumptions have gained common acceptance when plans have been made to protect the environment of the sub-tidal zone. Not the least has been the subliminal persuasion offered by successive generations of maps on which the topography of the underwater landscape has been so seductively mis-represented as a sterile plain of beguiling blue. Here, historic shipwrecks have been scattered like decoys to allure the attention of our legislators away from the wider vision of the submerged national archaeological resource. (Tomalin 2000:96)

The history of the shore is seamless, with humans moving easily from water to land, utilizing resources throughout; archaeological investigations should likewise be seamless (Cooper 1993:7; Tomalin 2000; Ringer 2003; Rönnby 2007). Likewise, too, they should be continuous not only across the waterline but also across modern international boundaries and temporal divisions (Abel 2001; Adams 2003). All of these seams are important as factors that influenced past worldviews and modern categories for analyzing and exploring patterns of past behavior, but they are not absolute. Past littoral peoples moved freely across the waterline; an arbitrary and invisible line through the middle of a natural thoroughfare, such as the international boundary through Lake Ontario, did not hinder their movement. Patterns of crossing and recrossing the shore and international border continued from generation to generation, spanning what are recognized as cultural shifts only with the long-view of history and archaeology. Therefore, a study of the maritime landscape, the environment as perceived by people who lived at least part of their lives beside or drew at least a portion of their livelihood

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This dissertation follows the style of *Historical Archaeology*.

from the water, requires that these borders be acknowledged without succumbing to circumscription.

To that end, the study of Lake Ontario's maritime cultural landscape involved a combined terrestrial and submerged archaeological survey of seven 1 km square areas in the northeast portion of the lake. Ethnographic and historic data bolstered the archaeological fieldwork. In many cases this process involved drawing together known but scattered and obscure data spanning the past 5,000 years. Remarkably few of the sites recorded in the course of this survey were unknown; the shore is a well-traveled, if not always well-studied, region populated by observant people. Rather, the strength of this study lay in synthesizing the archaeological data, historical documents, and oral histories into a holistic discussion of the lake shore from the perspective of cultural geography.

While conducting this research, three distinct groups raised three very different questions. The most common question among the local informants was "why here?" Conversely, nautical archaeologists have asked "is it a maritime landscape if it is on a lake?" and finally, Dr. Kevin Crisman occasionally wondered "how will the study be organized?"

Why Here?

"Here" is a relative concept, and the question of "why here?" can be answered on at least three levels: "why a Great Lake?" "why Lake Ontario?" and "why the area around my house?" The Great Lakes are large enough to have developed a true and unique maritime culture, but, as lakes, tend to have less active shorelines than are found along most ocean coasts. Smaller waves and the lack of regular tides create a less energetic environment that has the potential for better site preservation along the littoral. Conversely, the action of ice on the Great Lakes had to be constantly considered, and the lack of wide tidal swings meant that there was not the possibility of walking the foreshore at low tide to search for sites. As a result of this balance of pros and cons, the Great Lakes in general do not offer any definitive advantage over low-energy stretches of the North American coast, but the advantages inherent in Lake Ontario make it an excellent location for such a study (Figure 1.1).

Lake Ontario was the first of the Great Lakes to be developed by Europeans, and it was part of the home ranges of the Five Nations Iroquois, the Huron-Wendat, and the Mississauga, as well as other Native American groups known only from their archaeological remains. Consequently, it was at the heart of early Great Lakes maritime culture. This position was emphasized by an early 19th-century commentator who compared Ontario (then Upper Canada) to Asia Minor and Lake Ontario to the Mediterranean (Anonymous 18--:308). This importance quickly waned, and, as both the U.S. and Canada expanded westward, Lake Ontario was left behind, so that the contrast between its “present-day commercial poverty and its wealth of history is striking” (Pound 1945:9). The abandonment of the area, however, made it an ideal archaeological sample. Lack of later development has preserved the 19th-century landscape in many areas. Furthermore, Lake Ontario fell by the wayside not because the lake itself was not viable but because it was largely inaccessible. Niagara Falls, and later the restrictions of the Welland Canal, limited the interaction between Lake Ontario and the other Great Lakes. There were certainly influences on Lake Ontario culture from the upper Great Lakes, the interior of North America, and the Atlantic seaboard, but these influences were less pronounced on Lake Ontario, especially after the opening of the Erie Canal drew much of the commerce south of the lake. Consequently, Lake Ontario can be considered as a unit and outside influences can be taken into account.

Finally, the northeast portion of the lake was selected for reasons both historical and archaeological, particularly as it relates to site preservation. There is ample evidence of Native American habitation in this region. It was also one of the first areas in the Great Lakes region to be inhabited by the French and settled by the British. It was also the veritable mouth of the siphon for many raw materials leaving the region for British consumption. The northeast shore of Lake Ontario suffers from less erosion than does much of the rest of the lake shore. It is protected by several islands and embayments, as

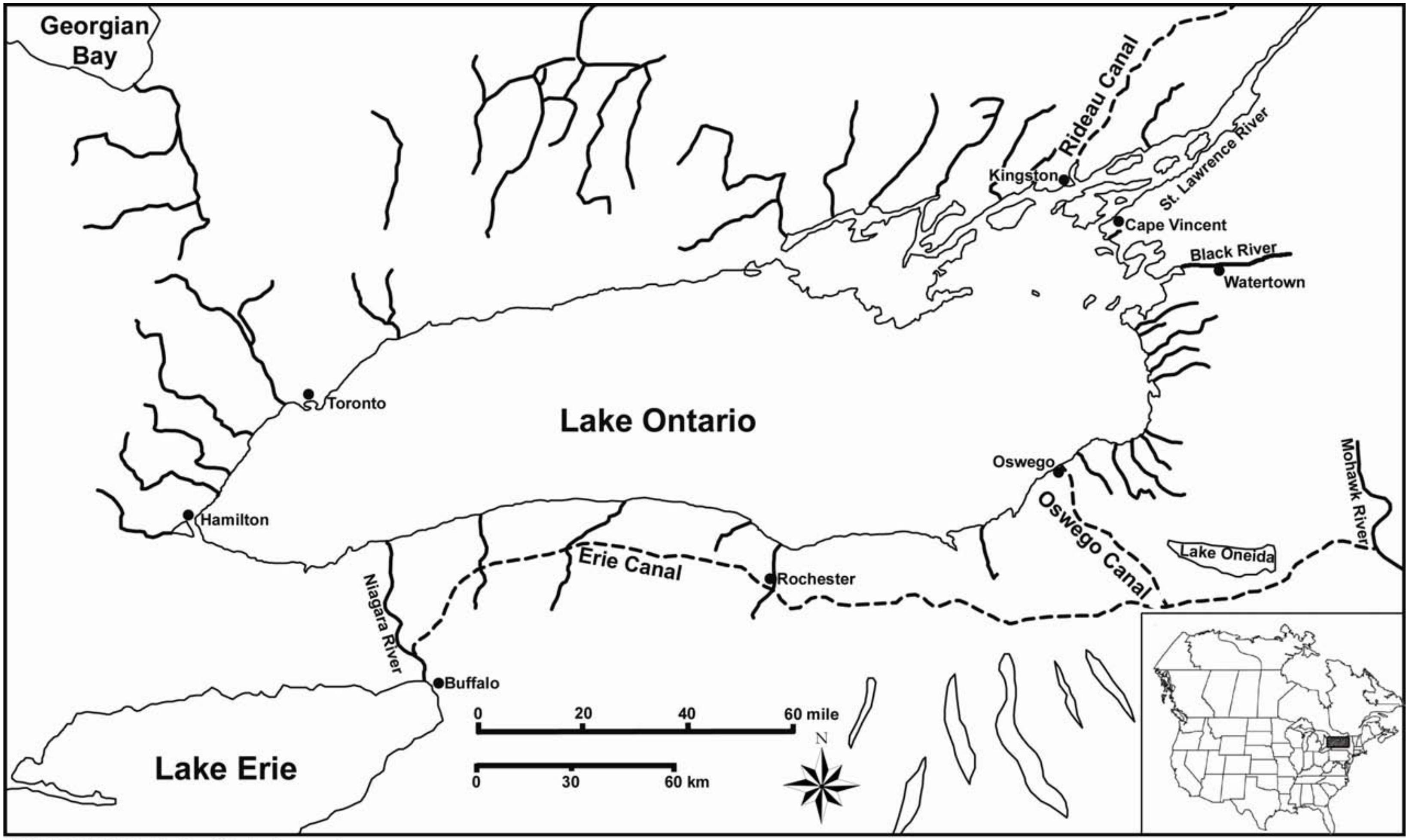

FIGURE 1.1. Lake Ontario region.

well as differential isostatic rebound, which is slowly moving shoreline sites farther inland and away from the destructive interface of land and water. Accordingly, littoral sites in this region tend to be better preserved than comparable sites throughout much of the Great Lakes and the North American coasts.

Is It a Maritime Landscape if It Is on a Lake?

"Maritime" is defined as "on, near, or living near the sea…of the sea in relation to navigation, shipping, etc…characteristic of sailors; nautical" (Webster 1983:1101). Strictly speaking, to be described as "maritime" something must be associated with the sea. There is, however, a tradition of using the terms "maritime" and "marine" to refer to the Great Lakes (Lenihan 1987). Similarly, Christer Westerdahl (2003) has discussed Lake Vänern, which is approximately a quarter the size of Lake Ontario, as a maritime landscape. This use of "maritime" would have also been acceptable to historic people, who considered Lake Ontario "truly an inland sea" (O'Callaghan 1855a:122). Lake Ontario and the other Great Lakes define the region's economy, culture, and climate much as a sea defines those same aspects of its coast. Furthermore, millions of people have an almost spiritual connection with the Great Lakes, so that they define the local relationship with the environment (Annin 2006:xii,12).

How Is the Study Organized?

Archaeology works in three dimensions: not length, width, and height, but space, time, and resolution or scale. To remain tractable, a study must yield in at least one of these dimensions if it is expanded in the other two. Addressing a topic as broad as "landscape," for a region as large as one of the Great Lakes, over a period as long as 5,000 years means that there must be a sacrifice of some resolution, or else the study becomes untenable. Consequently, the primary focus was fixed on the individual survey areas and on what would have been perceptible to the inhabitants of these areas. The remnants of everyday life recovered from the historical and archaeological record therefore define what aspects of each landscape are discussed. In many instances, findings within a single survey area serve as a touchstone for discussing a broader cultural trend. As the discussion ranges from survey areas to the surrounding regions, and to Lake Ontario as a whole, the resolution of detail becomes coarser, much as it would for an individual experiencing the landscape during the 19th century.

Although an inhabitant of an historic landscape would be capable of understanding the nuances and context of his or her environment at a glance, a corresponding description intended to match this instantaneous understanding would be a ball of unintelligible print. Instead, this dissertation builds from a description of its theoretical underpinnings in Chapter II to a discussion of what types of questions should be addressed in the future in Chapter X. Chapter II, which explains what is meant by “landscape” as well as addressing issues of scale and introducing human ecology, is followed, in Chapter III, by an explanation of how the data discussed in the subsequent chapters were collected. Chapter IV provides the physical context for the study, outlining the geographical substrate upon which the cultural landscape developed. Chapter V and Chapter VI discuss the history and development of Lake Ontario, with the chapters divided after the American Revolutionary War, at the time when European American/Canadian settlement of the lake margin flourished. These chapters focus on the cultural, economic, and transportation history of the lake as a whole, but deal explicitly with patterns that pertain to the individual survey areas, while placing the entire lake in a larger international context. The next chapter introduces the individual survey areas through the place names by which they were identified. Chapter VIII then presents the results from each survey area. To make this presentation as holistic as possible, the archaeological, historical, and ethnographic results are presented and interpreted for each survey area in sequence from north to south. So that this chapter does not become too cumbersome, all archaeological description not pertinent to the discussion is included in Appendix A. Building on the individual survey area interpretations, Chapter IX presents those interpretations of the Lake Ontario maritime landscape that span more than one survey area or generation. Finally, Chapter X contains several suggestions for how the findings of this project can be developed into future research questions. Chapter X also presents an argument for integrating archaeological and human ecological data into multi-disciplinary studies that have the potential to benefit humanity at large.

CHAPTER II

UNDERLYING DEFINITIONS, ASSUMPTIONS, AND QUESTIONS

> Archaeology and cultural anthropology do, or at least should, enjoy a close, symbiotic relationship, and archaeology is indeed critically dependent on stimuli and models grounded in social, ecological, and evolutionary anthropology. But archaeology has been equally dependent on geology, biology, and geography at some time during its development. Archaeology is a complex social science in its own right. (Butzer 1980:421)

Shipwrecks are unarguably important to nautical and maritime archaeology. They form the foundation of the field through the number of shipwrecks that have been excavated and the amount of cultural data that is produced by each shipwreck, and through the important roles that vessels played in maritime cultures. Vessels are fundamental to nearly all maritime lifeways, but they are merely one of many artifact classes that define a maritime culture. Sailors spent only a portion of their lives on the water and they were integrated in a diverse community that depended on, supported, or profited from maritime commerce, warfare, and resources, but which, in many cases, never left the land. In order to fully understand maritime cultures, maritime archaeology must pursue all aspects of the maritime past. The broader and more inclusive these pursuits, the more fodder there is for the development of theories and the possibilities for crosspollination with anthropology, geography, and other fields.

One way to approach the inclusive study of maritime archaeology is to view the maritime past through a broad and geographically-oriented landscape method (Breen and Kane 2004:470). This tack allows for the discussion of multiple groups in various settings but surrenders the depth and detail of a single-site study. Both generalizing and particularistic endeavors have a place in maritime archaeology and there is a recursive relationship between these types of studies. Particularistic excavations provide the data that form the foundations of more holistic surveys, while the surveys generate additional research questions and broader historical contexts for future excavations. Healthy archaeology depends on the pursuit of both objectives.

This study is of the holistic survey variety. It recorded the majority of archaeological sites situated within the survey areas and perceptible through the survey methods with the goal of discussing life along the northeast shore of Lake Ontario. The shore is of particular importance to maritime archaeology because ships rarely cross onto land and the majority of human populations, whom ships were built to serve, never cross onto the water. The areas surveyed here thus forms a short bridge between maritime archaeology and terrestrial archaeology through the communication and transportation routes that radiate from the shoreline. The ultimate goal is to view lakemen as part Lake Ontario maritime cultures, and the maritime cultures as part of their larger societies.

Landscape Archaeology

Landscape exists at the intersection of culture and space. As such, it falls neatly within and between the disciplines of history, geography, and archaeology; disciplines that have strong methodological and theoretical associations (Sauer 1941:6; Jackson et al. 1970; Cronon 1983; Ashmore and Knapp 1999; Head 2000:52-54; Baker 2003). Geographical studies tend to focus on the question of "where," while archaeological and historical projects often ask "when" or "how" and occasionally "why." Inquiries that ask all of these questions exist where anthropology and geography overlap and are known alternately as cultural geography or landscape archaeology.

The intersection of space and culture within landscape is more than an artifact of academic disciplines; it is fundamental to very nature of space and culture. Space is a medium for human activity and as such does not have significance apart from that activity. Space is always present, but, until humans utilize or acknowledge a particular space and make it a place, it does not exist culturally. Similarly, space provides the context for culture; places are everywhere that culture is. Furthermore, both place and culture are part of human experience, "a person is 'in place' just as much as she or he is 'in culture'" (Tilley 1994:18). Time also plays a role as cultures and spaces change with time. Thus, places are culturally determined and cultures are strongly influenced by their spaces, all of which shift through time forming culturally distinct and frequently overlapping landscapes, often within a single geographic region (Tilley 1994:18; Knapp and Ashmore 2000:8,18). In the context of Lake Ontario, the lake and its surrounding lands are the space that becomes a landscape, a type of place, when viewed through human eyes and manipulated through human actions. These perceptions and actions, in turn, are strongly tied to the space and environment of the lake, but they are also determined by past experiences and culture. As a result, two different cultures, for example, the Iroquois and the French, can inhabit two distinct landscapes within the same place, the lake shore. Their perception of this landscape in turn influences their actions, which in turn have implications for their culture and the physical environment both in the immediate present and in the future. There is no way to separate culture, time, and space from the landscape.

Clearly, landscape is a concept that is both multifaceted and difficult to define. Different scholars have varying definitions of "landscape," so that use of the term can range from "usefully ambiguous," to muddled, to "just plain frustrating" (Head 2000:54; Anschuetz et al. 2001:158,165; Jones 2006:523). It is also often used to gloss simple questions of spatial distribution with little or no attempt at cultural interpretation (Anschuetz et al. 2001:175-176). Consequently, it is necessary to discuss how this term has been used and to establish a functional definition for this study.

Prior to the 1990s space was measured and quantified but generally interpreted by archaeologists as being neutral, external, and indifferent. People were seen as moving across and inhabiting space, and the frictions of space that effect that movement and habitation were acknowledged. However, space, and by extension landscape, was not interpreted as a cultural force. The 1990s, however, saw a flourishing of landscape studies, with space moving out of the background and being actively interpreted and theorized (Butzer 1980:418; Tilley 1994:24,67; Anschuetz et al. 2001:158; Trifković 2006:269). During this time, space came to be seen as a medium for action rather than a container; space was involved in the action and could not be divorced from it (Tilley 1994:10). This trend was strongest in Europe where a phenomenological approach was often adopted, as opposed to the U.S. where, until recent years, the more processual perspective remained dominant (Head 2000:58). As a result, definitions of "landscape" such as that provided by Christopher Tilley (1994:25) came to the fore:

> By 'landscape' I want instead to refer to the physical and visual form of the earth as an environment and as a setting in which locales occur and in dialectical relation to which meanings are created, reproduced and transformed.

Organizations such as the European Landscape Convention also adopted definitions of "landscape" that focused on the meaning and perception of place, such as "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (Fairclough 2006:204).

Some have gone as far as to depict landscape as an idea or a process (Anschuetz et al. 2001:161; Fairclough 2006:205), but most scholars prefer to retain a strong relationship between place, people, and landscape. This relationship not only helps to combat the environmental determinism that can begin to creep in whenever space and place become the primary research foci but ensures that the hypotheses remain linked to testable data (Sauer 1941; Tilley 1994:19; Anschuetz et al. 2001:162). The relationship between people, place, and landscape can range from reciprocal to dialectical, but the physical environment and human social activity are always kept in focus. Neither the environment nor the people are passive; both function to construct and reconstruct the other (Welinder 1997:88; Head 2000:8; Cassell and Stachiw 2005:1; Taska 2005:9,11-12). The landscape is made up of multiple environmental features, such as the climate and the locations of water, arable land, fuel, and raw materials, as well as social, political, and ideological components, all of which are interrelated and cannot be understood without reference to each other (Meinig 1979; Samuels 1979; Westerdahl 1992; Welinder 1997; Martin 2000:39; Jones 2006:523; Meier 2006). Furthermore, each landscape is best understood in the context of its neighbors and the landscapes that preceded it. From a practical perspective, a landscape does not extend beyond the space that a person can see or perceive. For example, the landscape is not just what can be seen but also includes smells or noises that are perceptible beyond the line of sight, as well as adjacent places that one can see in the mind's eye and connect to one's current viewscape (that is, if someone can imagine the space over the next hill, then it is part of the effective landscape). However, the current landscape is seen and perceived based on past experiences so that the landscape is constructed of all past personal encounters in this particular space, the stories about the space, and the current status of the space. The landscape is thus constantly being constructed and altered. It is culturally dynamic and a force of cultural construction that coevolves with culture (Tilley 1994:23; Welinder 1997:96; Dyson-Bruce 2003; Ash 2005:3; Cassell and Stachiw 2005:3).

That landscape is a part of the material culture of a society makes it attractive to anthropologists. W.G. Hoskins (1955:14) has described landscape as "the richest historical record we posses," whereas Kurt Anschuetz and colleagues (2001:190) use the analogy of "a mirror of a community." Regardless of whether the landscape is viewed as a document or a mirror, culture is alive in place and written on space. In ways large and small the landscape preserves culture (Sauer 1941:8; Williamson 1994:78). The fact that landscape is also a force in the creation of culture makes it a dynamic field of study. One way that anthropologists have theorized this reciprocal relationship between culture and space is through practice theory (Bourdieu 1977; Nickolai 2003). From this perspective, landscape is part of the *habitus*, or tendencies that offer practical solutions to demands within a particular cultural and environmental framework. How someone views and uses the landscape is one of the solutions to the demands of the cultural and environmental framework. Fundamental to the idea of *habitus*, however, is that there is a recursive relationship between *habitus* and culture. Practice theory and the modern use of "landscape" are closely related.

The practical solutions that make up a culture's or an individual's *habitus* leave a residue, and that accumulated residue is the fodder of landscape archaeology. The archaeological landscape is difficult to reconstruct and is never completely knowable, due both to a lack of data and to the breadth of information that must be considered. So much of what makes up a past landscape has been lost to time and change that all archaeological landscapes are in a sense prehistoric, in that the best method to approach them is through physical investigation supplemented by anecdotes and analogies (Ascher 1968; Fairclough 2006:209). We have lost the “skin” of the land (the trees, flowers, people, perishable structures, noises, smells, and so forth) and are left with merely the “bones” (rocks, hills, valleys, structural remains, archaeological deposits). This remaining data only lends itself to a coarse interpretation of the past, but it is what we have (Tilley 1994:73). Lost, then, are most of the myths, individual daily activities, short-term sense of time, and most of the other ephemeral events and thoughts that define a space for most people. These parts of the landscape need to be remembered at all times and considered whenever they are available (Van der Noort and O'Sullivan 2006:33). The purpose of archaeology, after all, is to study past culture, not simply past debris.

There are essentially two lines of evidence available to reconstruct the archaeological landscape: 1) living knowledge, including place names, myths/folklore, beliefs, and practices; and 2) reconstructed knowledge, based on archaeological remains, palynology, and historical documents (Head 2000:64). Living knowledge is sparse in some locations and thick in others, depending on the nature of the population, how long they have lived there, and how they perceive or value their past. The use of this knowledge requires the care of the historian and the ethnologist to evaluate how accurately current knowledge represents past knowledge. Reconstructed knowledge is more normal archaeological fare. It can include settlement patterns and artifact distributions (Teigelake 2003; Jones 2006:523). It must, however, also extend beyond the site as a unit of analysis. Landscapes are made up of connections and interactions, archaeologically visible today, represented in historic maps and documents, and available from previously collected data. Since all aspects of the landscape reflect culture in some fashion, they are all equally important in terms of interpreting the culture of an area (Butzer 1980:419; Williamson 1994:78; Anschuetz et al. 2001:170-171;

Llobera 2001:1006; Newman 2001:100; Ash 2005:66; Hey 2006:114). The isolated artifact can sometimes tell as much about the landscape as the historic foundation, the palisaded village, the shipwreck, and the place name on a map.

The landscape perspective lends itself to a balanced approach to the archaeological record, one that is informed by the current inhabitants of the landscape. Such multi-vocal data help to combat the biases inherent in every archaeological study (Ash 2005:66). This approach is not, however, without problems. The reconstructed landscape is often not a map of the "real world," a world that an historic person who lived in it would recognize. It instead tends to capture a particular interpretation at a particular scale (Fairclough 2006:207). This peculiarity occurs because of data missing from the historical record, but it is also inherent in maps and theory. Both maps and theories exist to streamline perception and understanding. Maps simplify some aspects of the world to demonstrate others more clearly, while theories emphasize particular aspects of human thought and physiology to explain specific behaviors. Humans cannot grasp everything at one time so maps, theories, and reconstructed landscapes all hinge on what is deemed important to show at a given moment. What remains in the archaeological and historical record often determines the focus of a reconstructed landscape, as it does in the rest of archaeology. Artifacts, sites, features, and material culture serve as touchstones of the past. They form the physical foundation of what can be told. The story and the landscape are nearly always larger than the artifact, but the artifact serves to focus the archaeologist's attention on particular aspects of a knowable past.

In addition to the archaeologist's own biases as to what is knowable and what is important, which should be in part mitigated by the multitude of data available in any given landscape, issues of dynamism and causation are also concerns. It is easy to record the various aspects of a landscape and mark them on a map, but it is difficult to reconstruct the vitality that the landscape had for those who inhabited it (Welinder 1997:96). Even when the various aspects of a landscape are sorted into occupation periods and events, the small daily activities of a group are conflated. At best the archaeologist can attempt to parse the features of the landscape into temporal packets that are as small as possible and yet still retain meaning, then look for evidence of stability and change between the periods. It is also important not to conflate correlation with causation. The form of a place may have multiple causes, not all of which will be readily perceptible (Sauer 1941:7; Jones 2006:525). Simply because a story fits the evidence does not mean that the story is “true.” Here, again, the multiple lines of evidence that construct and bind the landscape offer some hope that reasonably accurate interpretations will surface.

For the purposes of this study, we can define a landscape as the physical environment perceptible to an individual and his or her perception of that environment. This landscape is linked to adjacent contemporaneous landscapes and overlapping past landscapes to form the individual’s world. From an archaeological perspective, these landscapes are made up of both the residues that individuals left behind during their inhabitation and use of the physical environment, and the effects that the landscape had on their culture, which are tenable through other forms of historical, ethnographic, and archaeological evidence. These cultural data can then be interpreted using any applicable theoretical perspective. In the course of this study, aspects of phenomenology, Marxist theory, practice theory, and the Annales School will be applied.

Two other landscape concepts, “seascape” and “maritime cultural landscape” have developed out of the study of landscapes and are directly applicable to this research. A true seascape is constructed of the factors that allow an individual to perceive his or her location out of sight of land. These factors can include stars, currents, swells, birds, winds, clouds, and phosphorescence (such as the *te lapa* of the Pacific Islanders; Lewis 1994:253). These factors allow navigators to place themselves on a mental map containing cultural constructs, such as routes, and unseen but known locations, which then become part of the seascape. Technology further develops the seascape through navigation instruments that supplement the natural factors and refine the navigator’s mental map. Just as on land, the perception of such factors are influenced by culture and are in turn fed back into the culture as charts, stories, and so on.

Some scholars (e.g. McNiven 2003; Breen and Lane 2004) use the term "seascape" to describe any landscape viewed from the sea and so include seamarks, harbors, reefs, islands, shallows indicated by changes in water color, and other land-based phenomenon in this concept. These factors, however, are derived from land, exposed or submerged, and therefore should be considered part of the original term, "landscape." This distinction is bolstered by the understanding that the shore is a continuum from the uplands to the continental shelf that has been variously submerged and exposed through time. The idea of a seascape is, therefore, largely moot for Lake Ontario, where a vessel is never more than 40 km from land. It is, however, useful to consider how the same landscape changes when perceived from the water rather than from the land, a perspective that is very useful for Lake Ontario and rests comfortably within the term “maritime cultural landscape.”

Maritime cultural landscapes combine physical aspects of landscape and seascape to analyze the culture of maritime peoples within a spatial context, while retaining the recursive culture-nature relationship of landscape study. This juncture is particularly strong at the shore where the maritime cultural landscape exists at not only the theoretical but also the physical concurrence of landscape and seascape. The term was first used in English by Christer Westerdahl during the early 1990s and has since been championed by him (Westerdahl 1992, 2003, 2006, in press). A wide range of maritime archaeologists have further used and successfully developed the concept.

The primary attraction of the maritime cultural landscape approach is that it does not depend exclusively on shipwrecks. Shipwrecks are one important line of evidence, but in the landscape approach they are integrated with maritime history and the physical residue of past maritime systems. Residues include ports, harbor, roadways, rail lines, modified rivers, villages, cottages, fortifications, shipyards, chandlers, warehouses, custom houses, commodities, insurance companies, lighthouses, and regulations (Williamson 1994:68; Head 2000:59; McErlean et al. 2003:2; Russell et al. 2004:101). All of these features, and others, are interpreted within the maritime landscape in order to explore “how people perceived and understood the sea and used this knowledge and understanding to order and constitute the landscape and societies that they live in" (O'Sullivan and Breen 2007:15). Similar to landscapes in general, this understanding of the maritime landscape is not limited to only sites or sights but includes a wide range of interrelated and often ephemeral phenomena. Some of these phenomena, such as mandatory vessel lights can be gleaned from the historical record, but others, such as sounds and smells, are nearly always lost. Others, such as perceived distances or places of danger and safety, can only occasionally be reconstructed (Pott 1994; Hardesty 2000:175; Russell et al. 2004:101). One avenue by which to explore these perceptions is presented by place names. Place names have been part of maritime cultural landscape studies since the beginning and are important because they transform physical and geographical reality into something that is historically and culturally experienced (Westerdahl 1992; Tilley 1994). Similar to human alterations to the environment, place names are culture laid directly onto space to form a landscape.

Archaeology and Boundaries

The goal of this work is not to "put boundaries that do not exist around regions that do not matter" (Duncan 1989:238), but to discuss the maritime history and archaeology of Lake Ontario holistically. Thus, history will be discussed as a continuum, with each group paving the way for subsequent cultures, not in a preordained fashion, but acknowledging that later groups often built on earlier groups. Similarly, no more distinction than necessary will be made between lives led on the water and those led on land; the two are equal parts of a maritime existence and many inhabitants of the shore moved freely from one to the other. The role of Lake Ontario as a natural highway will also be emphasized, without regard for modern political borders. This approach is a direct result of adopting a landscape perspective, but has not always been standard in archaeological studies and the rationale for an integrated approach bears some explanation.

Present-day definitions of boundaries between eco-zones are often based on modern perceptions rather than pre-contact and historic experiences. Inland, shoreline, coastal, and lacustrine environs have physical distinctions, but they are modern constructs and have little relevance to actual limits of archaeological sites (Head 2000:8; Oxley 2000:31; Flatman 2003). Such boundaries were not significant to early inhabitants who used the lake for transportation and resource gathering, and who shifted between terrestrial and marine adaptations (Lance 1987; Wood 2000). In order to understand the lives and cultures of early inhabitants around Lake Ontario, both Native American and European American, it is necessary to investigate both sides of the waterline and to recognize that submerged and terrestrial deposits in the same vicinity were often left by members of the same group, if not the same individual (Eames 1980; Pieters et al. 2006). Similarly, modern political boundaries have little influence on the movement of past people, especially across a natural thoroughfare such as a lake. On Lake Ontario these boundaries fluctuated, evaporated, and were ignored through the first quarter of the 19th century. Put simply, neither the shoreline nor the international boundary should be an obstruction in interpreting the maritime cultural landscape of Lake Ontario. Collecting data across modern perceptions and boundaries allows the maritime landscape to be viewed as a whole and the relationships between people and places and between the various aspects of a landscape to be fully explored. This seamless approach is integral to the landscape approach and is argued for by many scholars (Knapp and Ashmore 2000:2; Martin 2000:39; Melnick 2000:25; Anschuetz et al. 2001:163; Breen and Lane 2004:469; Smith 2005:836; Fairclough 2006:209; Van der Noort and O'Sullivan 2006:147; Westerdahl 2006:60).

Boundaries, however, cannot simply be ignored. Boundaries are part of the landscape; often they were the most important part of the landscape, marking where ownership and perception shifted. Past boundaries, however, were generally not the boundaries of today and must be reconstructed from the archaeological and historical record, rather than accepted a priori from modern maps. Boundaries in the past were likely not as firm as today, but were often "fuzzy" or determined from a central place with ever-decreasing levels of ownership towards the periphery. With these boundaries there was often tension between adjacent cultures and between the central culture and the encircling wilderness (Head 2000:xxii; Smith 2005). The presence of water transportation and a widely, although inconsistently, perceived boundary such as the shore exacerbates these tensions by bringing cultures into contact over a greater geographic region and by increasing the value of the space to be controlled.

One useful way to understand historic boundaries is the concept of a semantic ecotone (Melnick 2000). An ecotone is a transition zone between ecological communities that is often defined by vague borders. A semantic ecotone is an area, be it geographic, thematic, or cultural, characterized by indistinct boundaries and the potential for both mutual dependence and competition with surrounding semantic ecotones. This idea allows for the complex construction and overlapping layers of landscapes with multiple semantic ecotones possible at a single time in a single landscape. The ecotone analogy is particularly apt for the cultural study of shorelines, which are both actual and semantic ecotones. The shore bounds the land and the water but it shifts with time and is perceived differently by different cultures. It also cuts across other boundaries. In the case of Lake Ontario, the shore continues across the current political boundary and many past cultural boundaries.

The shore fulfills one of the primary goals of maritime landscape archaeology by integrating the wet and dry aspects of the landscape. Nowhere is the “weakness of the artificial seam” separating terrestrial and underwater archaeology more clear than when discussing transportation and communication (Tomalin 2000:85). Goods, commodities, and cultures move from the hinterland to the hintersea and back again as maritime resources are moved inland, inland resources are transported over water, and inland resources are brought to the shore to build boats, ships, and containers. The functional world of many people was defined by how far they could travel and return in a single day (approximately 7-16 km); even the simplest nautical technology, however, allowed for travel 4-5 times faster than was achievable on foot (Wood 2000:148; Naylor 2004:140; O'Sullivan and Breen 2007:24,56). Water transportation increases functional worlds and links shore communities, transforming the shoreline from a physical boundary into a cultural bridge.

Shore Archaeology

Despite this role as a bridge, shore and coastal archaeology has been problematic for maritime archeologists. In part this difficulty arises from troubles with defining, from an archaeological perspective, exactly what is the coast or shore (Westley and Dix 2006:13). The coast is generally defined as the area where marine processes and terrestrial processes affect each other. This zone can range from hundreds to thousands of meters in width, depending on the slope and substrate of the coastal margin. If climatic influences are added to the equation then the coastal margin can be expanded to several hundred kilometers. These processes certainly affect cultures not normally classified as maritime, but the zone in which the coast influences human activities is of more immediate concern to coastal archaeology. The coastal activity zone can be as limited as 5-10 km on either side of the waterline, or it can extend much farther inland for cultures that forage both along the coast and in the uplands as part of their seasonal round (Fulford et al. 1997:22; Westley and Dix 2006:13; O'Sullivan and Breen 2007:241). Adding to the difficulty of defining “shore” and by extension “shore archaeology” is the fact that the littoral is a moving target (Ford in press). Within the Lake Ontario basin, water levels have risen and fallen repeatedly, so that sites along the modern shore may have been formed far from the lake, and formerly maritime sites are now submerged or in the uplands. For these reasons, “shore” will remain undefined to facilitate discussion of the maritime landscape as it presents itself, near and far from the current waterline.

Working in the littoral zone presents additional methodological and disciplinary problems. The most pronounced of the methodological problems are the difficulties in excavating exposed but saturated soils and the dynamic nature of the shore zone. The action of waves, ice, and current, as well as the hydraulic suspension of soils, make site preservation and stratigraphy relevant concerns. However, many significant archaeological sites have been successfully recorded in these environments (Murphy 1976; Milne 1985; Knoerl 1994; Crisman 1995; Moore 1995; Anfinson 1997; Aberg and

Lewis 2000; Erlandson and Fitzpatrick 2006; Fitzhugh and Phaneuf 2008; Moore 2008; Fitzhugh and Ford 2009). Even more than these concerns, the neglect of the shore is largely a result of disciplinary divisions between terrestrial and submerged archaeology. Most terrestrial archaeologists have viewed the waterline as an insurmountable boundary, preferring not to excavate saturated soils and perceiving submerged lands to be a sterile plain, much like the water's surface (Tomalin 2000:96; Flatman 2003:151; Gawronski 2003:133; Cooney 2004:323). Underwater archaeologists have, for their part, focused the majority of their attention on ships, preferring these complex and temporally-focused sites to the broader archaeological resource of the shore (Hale 2000:55; Martin 2000:39; Flatman 2003:150; Ringer 2003:188). Archaeologists are not alone in neglecting the shore. Historians have also been slow to recognize the importance of "the threshold of American prehistory and history, of American culture" (Vickers 1993; Stilgoe 1994:ix).

Despite these shortcomings, several archaeological studies have integrated terrestrial and underwater archaeology to study the maritime culture of the shore. Archaeologists in Europe are on the leading edge of the movement toward increased interest in integrated coastal archaeology (Günther 1903; Crawford 1927; Rudolph 1980; Milne and Hobley 1981; McGrail 1983, 1985; Raban 1988; Westerdahl 1992; O'Sullivan 1995; Fulford et al. 1997; Król 1997; Lemee 1997; Milne et al. 1998; Parker 1999; Aberg and Lewis 2000; Parker 2001; McErlean et al. 2003; Breen and Lane 2004; O'Sullivan 2004; Pasquinucci and Weski 2004; Pieters et al. 2006; Van der Noort and O'Sullivan 2006; Westerdahl 2006; Fischer 2007; Marriner and Morhange 2007; McConkey and McErlean 2007; McErlean 2007; McErlean et al. 2007; O'Sullivan and Breen 2007; Rönnby 2007; Paddenberg and Hession 2008; Westerdahl in press). Fewer studies have been conducted in North America (Lenihan 1987; Leshikar-Denton 1993; Anfinson 1997; Emory 2000; Ringer 2003; Spirek and Harris 2003; Vrana and Stoep 2003; Russell 2005; Braje et al. 2006; Rodgers et al. 2006; Ford 2007; Jordan-Greene 2007; Julig 2007; Moser 2007; Fitzhugh and Phaneuf 2008; Delgado 2009:52-90) and fewer still on Lake Ontario (Knoerl 1994; Moore 1995, 1996a, 2005, 2008).

Maritime People and the Shore

Based on these studies and the historical record there is ample evidence for maritime cultures, the members of which moved back and forth across what Joel Hedgpeth (1976) called “the living edge.” It should be noted from the outset, however, that while the same individuals moved across the waterline, behavior was not always the same ashore and afloat. Different places and different groups engender different behaviors (Henningsen 1972:124). The life of Ned Myers (1989 [1843]), able at sea and lost on land, is an excellent example of this phenomenon. Thus, it is necessary to study both land and water aspects of a culture to obtain a full understanding of that culture’s maritime adaptation, but the two facets should not be expected to be identical.

In addition to being the launching point for vessels and voyages, the shore centralizes a wide range of human activities such as hunting, foraging, agriculture, industry, and recreation, many of which glide into each other both geographically from land to water and temporally from season to season or day to day (Scurlock et al. 1974:82; Walker 1990:275; Gawronski 2003; Westerdahl 2003:18, 2006:61). One of the most common examples of this relationship existed with fisher-farmers. In some cases the main occupation was farming (O'Sullivan and Breen 2007:62), in others it was fishing (Pieters 2006:49; Verhaeghe 2006:216), or a nearly even mixture of the two (Eames 1980). This division of time manifested itself in divisions of labor and property that were largely based on subsistence but mitigated culturally. For example, on the south shore of the North Sea, fishing was the primary task of men but was not sufficient to support the population; as a result, women were involved in what are cross-culturally male-dominated occupations such as animal husbandry, hunting, net mending, agriculture, and trading (Murdock and Provost 1973; Pieters 2006:49,55). In adjacent communities, families of farmer-fishers maintained two residences: a farmstead and a “cellar” that occasionally housed the fisherman, but was primarily for the storage of nets, lines, barrels, and boats. Archaeologically, although maintained by the same individuals, these separate structures could appear to belong to two separate groups. As the hinterland population grew, and the demand for fish increased, many of the fishing families were able to transition entirely to fishing and added a second-story permanent residence to their cellars. During this transition it was not uncommon for fathers to pass the farm to one son and the cellar to the other, allowing both to found families and leading to population increase (Fox 2006). As this example illustrates, the shore is a complex and fertile ground for anthropological investigations.

Describing the situation of shore archaeology on Lake Ontario and the St. Lawrence River as it existed in 1990, Brian Osborne (81) wrote:

> Most researchers of Ontario's settlement history have stood with their backs to the Great Lakes. Their focus has been on the fur-trade, agriculture, forests, and minerals. Behind them, the St. Lawrence-Great Lakes "Laurentian" system was recognized as the routeway along which moved immigrants, imports, and staple exports. Little attention, however, has been paid to the fact that is also existed as a resource-medium in its own right, as an ecosystem that also fitted into the developing economy of the nineteenth century, and as the basis for the way of life of those families who turned to it for sustenance.

Since then there has been an increasing interest in the culture and development of the Lake Ontario shore by scholars such as Jonathan Moore and his colleagues at Parks Canada (Moore 1995, 1996b, 1996a, 2005, 2008), Kurt Knoerl (Utley et al. 1988; Knoerl 1994), and Ronald Williamson (1994). There have also been similar efforts farther down the St. Lawrence River (e.g. Pilon 2008).

The lake's historical record also argues for the easy movement of individuals and groups between maritime and terrestrial employment as the circumstances demanded. Young men commonly worked as sailors or timber shovers during the summer and as loggers, farmers, or shipbuilders during the winter, making a living as itinerant laborers and filling whatever work was seasonally available and profitable (Cooper 1993:11). Similarly, John Bedford's (1998:25) experiences during the early 19th century were not particularly different from what was noted on the North Sea. His grandfather was involved in rafting timber to Quebec and spent long periods of time away on the water, leaving Bedford's grandmother to run the family farm. A generation later, Wilson Benson emigrated to Ontario in 1841 and spent much of the 1840s working seasonally on lake schooners before settling down as a farmer and, in his later years as his health failed, as a shopkeeper (Wood 2000:43). Neither Bedford nor Benson was unique and their experiences were repeated all along the lake shore. More exceptional and worth mentioning for that reason was Barzillai Pease. Pease spent his early career working on sealers, whalers, and merchant ships sailing from his home of Edgartown, Martha's Vineyard, MA, before piloting Robert Fulton’s steamboat on the Hudson River (North River). He then came to Lake Ontario during the War of 1812 to command the troop transport vessels on the lake and was eventually hired to operate the first American steamboat on the Great Lakes, the *Ontario*. Despite this decidedly nautical resume, he also made a living as a merchant and farmer between the War of 1812 and his command of the *Ontario*, and did so again in later years (Snyder 1971).

Despite its importance and the growing interest in shoreline archaeology, many unidentified and unrecorded archaeological resources remain along the shore. For example, Moore’s (2008) recent work in the vicinity of Kingston , an area with a large diving community, an active avocational underwater archaeology society (Preserve Our Wrecks), and extensive historical documentation, identified several features that had not been previously recorded. In this survey he clearly demonstrated the benefits of a systematic and exhaustive examination of the historical and archaeological resources. Only Moore's archaeology and synthesis allowed a full understanding of a story that was known to exist. Similarly, the work of Edward Pollard (2008) in Tanzania and Dietlind Paddenberg and Brian Hession (2008) in England, two regions with dense coastal populations and well established traditions of coastal archaeology, demonstrated the ability of coastal archaeology to produce vast quantities of archaeological data and to identify immense coastal structures in areas that were previously thought to be well documented.

Issues of Scale and Change

Cultural landscapes are by definition a problem of scale. Culture is inextricably attached to people while landscapes are much larger than a person. Combining the human scale and the regional scale in a single document of interpretation necessitates an interest in scales. The complete story of a landscape encompasses the activities and perceptions of each individual interacting with that landscape. Limits on data make this ideal impossible to achieve. Nevertheless, archaeologists can work from the residues of individual actions to identify trends and patterns and then integrate them into the larger scale, namely, what is known about a culture. Moving from individual to culture, as well as moving from the individual to the individual's landscape, requires careful attention to the scale of inquiry.

This ability to move from scale to scale is a strength (Butzer 1980:419) but it can also lead to difficulties because certain analyses and conclusions are appropriate only at specific scales and conclusions true at one scale cannot always be transferred to others (Head 2000:8; Branch et al. 2005:4; Ridges 2006:145). These are not concerns often addressed in archaeological studies, especially since the advent of GIS technology, but they are relevant here due to the multiple scales employed. Scale, both in space and time, provides structure and context for interpreting results, similar to the scale on a map. When making a map the cartographer decides what level of simplification and abstraction (scale) allows for the representation of the most information. Similarly, the user of the map knows what to expect from the map simply by acknowledging the scale at which it was made. Maps are often the end product of data collection and analysis but the same concerns over levels of abstraction and simplification apply to how the data is collected and interpreted (Harris 2006:41; Lock and Molyneaux 2006b:xi; Ridges 2006:145). Synthesis also involves a significant reduction in scale in order to achieve interpretation and clarity. As discussed above, anthropological theories are also a form of simplification and abstraction that allow human understanding to move forward; as such they also work best when applied to certain scales of data.

Four questions summarize the problems and tensions of scale for archaeology: 1) How does the researcher understand the large and variable dataset that is geographical and cultural variation, and what levels of detail and generalization are appropriate? 2) How does the researcher coordinate the phenomenological scale, the scale at which the landscape was lived and experienced, with the analytical scale at which an archaeologist observes that landscape? 3) Can the data collected at the researcher's methodological data collection scale be extrapolated to a larger scale, such as the landscape or culture? 4) How can data from different environments and different scales be merged to achieve the phenomenological scale and cultural observations (Harris 2006:46-47; Lock and Molyneaux 2006a:4,10)?

The first question is addressed through theory. Theory allows us to engage large data sets in a meaningful manner. The second question implies a partial answer as to how this theory should be composed. Since the study of landscapes includes how people perceive their space, human scale is the natural base unit of measurement (Llobera 2001:1006; Gosden and Kirsanow 2006:28). The theories of phenomenology and practice theory lend themselves to understanding the landscape at the human scale. Archaeological data often needs to be aggregated to be meaningful and humans often operated in aggregate groups so it is useful to be able to extrapolate data from the human scale to larger scales (question 3). In this study this aggregation will be accomplished in a hierarchical manner with analysis carried out at smaller scale, combined and nested within analysis at the next larger scale (Harris 2006:41). Data from each of the survey areas will be interpreted at the human scale, and then at the survey area scale (1 km^2), and in conjunction with adjacent survey areas, before being aggregated with all of the survey areas to facilitate the discussion of the northeast portion of Lake Ontario and the lake as a whole. Much of this analysis will be done using GIS to synthesize and analyze the data. However, rather than relying on computer methods that provide geographical information with little cultural interpretation, human interaction with space will remain the primary question (Llobera 2001; Molyneaux 2006; Fitzjohn 2007).

The issue of scale is also a methodological concern. A survey area that appears small at the lake-wide scale is daunting when viewed from the ground and impossible to cover with limited-visibility diving surveys. Answering landscape questions requires a hierarchical approach with the modes of data collection specified to isolate and identify meaningful information. In the case of this study, the survey areas were selected at the historical, research, and cartographic scale, considering each survey block in terms of the surrounding area. Within each survey block, an initial survey was conducted using remote sensing equipment on water and walk-over surveys on land. Specific sites were then more closely inspected above and below water, with additional information provided by interviews. The data collected at each level of inquiry were logged separately but linked to the data created from it and the data that had led to its creation. This hierarchical approach to data collection allows the data to be meaningfully parsed and aggregated to appropriately answer questions of space and place.

The foregoing discussion is in the context of spatial scale but applies as well to the temporal scale. There is no single temporal scale. How we understand and perceive time varies across cultures, places, and individuals. Archaeology is in the difficult position of attempting to reconstruct these different scales of time from a record that has become frozen (Gosden and Kirsanow 2006:30). The content of the archaeological record, although always changing, is constructed of frozen moments. In some cases several moments are combined in a feature, but even those tend to be short in terms of both human life and human history. For example, digging, filling, reusing, and abandoning a storage pit or constructing, inhabiting, and abandoning a house are constructions of finite actions that, even when combined, are merely "snippets" of the larger cultural chronology. Each of these "snippets" is either preserved or lost in the archaeological record, along with many shorter episodes, such as chipping a stone tool, and eventually found or not found by archaeologists (a function of the methods and scales employed in data collection and analysis). The archaeologist is thus presented with an incomplete and flattened representation of past time that he or she must reconstruct into a meaningful sequence that preserves both the experiences of the individual and places them in the context of the larger culture.

Scales of space and time are also integrally linked to change and the archaeological ability to observe and interpret change. As Andrew White (2002:1) states, “Without the temporal dimension, space and everything it contains is static and change cannot be observed. If change cannot be observed, then one of the principle goals of anthropological archaeology, the study of culture change, cannot be achieved.” As cultures change, whether through internal or external influences, small alterations occur in the details of everyday individual lives and these changes eventually reach a scale at which they are archaeologically noticeable in the landscape (van de Guchte 2000:150-151). Not only are the idiosyncrasies of cultures preserved in the landscape but so are the idiosyncrasies of individuals, so that it is a matter of scale to determine which changes are systemic and which are individual; both are important, but the systemic cultural changes have more anthropological significance.

Cognitive Landscape

The changes that interest anthropologists are at the human and cultural scales. Consequently, they are less interested in the change from foraging to horticulture than in what it was to be a forager or a horticulturalist. Similarly, the settlement pattern is less interesting than the settlers (Brookfield 1964:301; Ridges 2006:149). In the end, it is the individual forager, horticulturalist, and settler who drove changes in subsistence and settlement, and one of the primary drivers of their decisions was their perceptions of their environment and their place in that environment. Such perception is very individual and an individual's landscape is nearly impossible to access archaeologically; there are, however, generally enough cultural similarities within a group that the material signature of those uses and perceptions are consistent within the landscape (Anschuetz et al. 2001:165-166; Fitzjohn 2007). The cultural or symbolic logic of a landscape often bolsters the economic rationality of the landscape because both are based in the surrounding physical environment (Tilley 1994:3; Fairclough 2006:204). Despite being derived from the physical environment, the landscape is imbedded in culture and as a result different cultures can perceive the same environment differently. In the case of North America, with multiple cultures and ethnic groups arriving at different times and under different circumstances, landscapes were often simultaneously perceived from drastically varying frames of reference. When these cultures came into contact so did their cognitive landscapes, and interpretations of the environment were overwritten and combined (Hardesty 2000:171,177). In addition to changes brought on by culture contact, cultural perceptions of the landscape also drifted with time.

An example of this drift pertinent to this study is provided by Jonathan Smith (2002), who discusses the perception of nature in the United States. Colonial Americans perceived nature as a threat, both because it might contain physical dangers and because they believed that prolonged exposure might “arouse beastly propensities” (Smith 2002:34). However, by the mid-19th century, nature came to be viewed as restorative and as part of what made America strong. Within this restorative perception of nature, there was also a secondary trend of heroic nature transforming into abused nature by the 1960s. For many people, both the heroic and the abused nature were condensed into symbolic landscapes that presented nature as an idea. They symbolized the larger idea of nature in a single landscape. Heroic landscapes included Niagara Falls, the Mississippi River, and the Grand Canyon. It is worth noting that each of these landscapes was presented to the public as a result of new technology or improved infrastructure permitting the better direct consumption of nature: the Erie Canal, steamboats, and railroads, respectively. This consumption of nature eventually lead to the perception of abused nature, with symbolic landscapes that included the contaminated and ultimately fiery Cuyahoga River in Cleveland, Ohio. The change from heroic to abused nature was not caused solely by physical changes in the environment; perceptions of culture and human ability also played a role. In the first case nature dwarfed humanity, but in the second human ingenuity was perceived as having the power to save nature from earlier human technological abuse (Smith 2002).

The distinctions between water and land and the intermediate shore landscape have similarly gone through changes over time. Past peoples recognized the shore as a natural border, perhaps the most obvious border on the landscape, and, as a result, imbued it with spiritual and cultural associations. They did not, however, likely conceive of the shore in the ecosystem sense that is common today but instead had distinctions of land and lake that reflected their own values and interactions with water, shore, and land (Van der Noort and O'Sullivan 2006:36,43). Often these associations focused on the dangerous or cleansing nature of water (Martin 1999:200; Cooney 2004:326; Lindenlauf 2004; Wonderley 2004:112-113; Pieters 2006:55; O'Sullivan and Breen 2007:125). The liminal nature of the coast was also important to many cultures; borders are often the domain of the Trickster (Hermes, Loki, Satan, Coyote and Raven, Krishna, Eshu, Elegba, or Anansi) and are special places demarcating the line between safety and danger or known and unknown (Hyde 2008).

Beyond spiritual associations, the shoreline can be visually and economically striking. The shore juxtaposes the verticality of ships with the generally low-lying nature of port settlements (Stilgoe 1994:22). The "forests of masts" analogy is often repeated, but this connection may have been deeper, linking the wilds of land with the wilderness of open water. Subconscious connections such as these, the kinds of connections that may have made a landsman viewing ships in port uneasy and that also make scientists interested in the "Truth of the past" uneasy, are remarkably difficult to access and nearly impossible to prove or disprove.

Alternatively, the role of shore communities in the political and economic system and how these positions effected their social interactions are far easier to demonstrate and test. Several scholars have argued that coastal and island communities were better connected to other coastal communities than to the inland society to which they were politically tied (Naylor 2004; Loveluck and Tys 2006:162; Verhaeghe 2006:218; Westerdahl 2006:59; O'Sullivan and Breen 2007:24). While maps give the appearance that islands and small shore communities are isolated and surrounded by both marine and terrestrial wilderness, these places were often better connected to their neighbors through necessity and relatively frictionless travel by boat. The question then is, how did this ease of access affect their perceptions of themselves, their culture, the body of water in front of them, and the land behind?

Historical, anecdotal, and archaeological data provide the means to access and hypothesize these divisions and perceptions. Several cognitive shore landscapes, large and small, that span approximately the last 5,000 years will be reconstructed. The research, however, is seated in the modern period, with all of the biases that position entails, and would be remiss if it did not also address the modern perception of the shore landscape.

The Shore and the Environment

Modern perception of the shore is defined by concern, it is seen as Smith’s (2002) "abused nature." The shore is an ecosystem with a human component. This conclusion leads to the consideration of how past humans affected the environment and how those effects in turn engaged culture, and how modern culture can address the consequences of past actions.

Humans are animals, and animals must not only exist in space but also transform that space into places that fit their needs. As intelligent animals, humans have dressed up this natural tendency by giving places special names, including “landscape.” The name does not change the fact that human economic practices are contingent on social relations (such as those of gender or class, for example), which are in turn dependent on seasonal and environmental changes (Costall 2006:18; Van der Noort and O'Sullivan 2006:113). Humans cannot divorce themselves from the practical and functional aspects of their environments. This argument has been strenuously made by Karl Butzer (1980) and others from a terrestrial archaeology perspective, and it applies doubly well to the shore.

The shore is one of the most productive ecosystems on Earth; a position on the coast allows a culture to take advantage of both maritime and terrestrial resources, as well as the resources that congregate where two major ecosystems collide (Walker 1990;

Welinder 1997:90; Bourne 2006; Goudie 2006:121). Beyond the "simple" matter of procuring resources, maritime trade also requires a close attention to the environment. Ports must address direct environmental concerns such as winds, currents, and waves, but also cultural phenomena indirectly linked with nature, such as the inland settlement and transportation system (topography and natural resources) and trade routes (often tied to natural resources) (Rickman 1985). Unfortunately, these practical considerations that worked in tandem with cultural considerations to form the landscape are seldom directly addressed in the historical period. A description such as John Bedford's (1998:37) discussion of what was involved in selecting a house site along the Lake Ontario shore is nearly unique:

> There is a bluff of lime rock along this shore a half mile or more in length varying from 10 to 40 feet high. We came to a break in this cliff where the bank descended by a gentle slope down to the waters edge. This break in the bluff is about 4 rods [66 ft, 20 m] in width and the shore was a gravel beach at this place so Father said this was the spot to build our house, that the high bluff on the NW would break the winds from the lake and this opening in the bluff was a good place to get down to the water and a first rate landing.

Far more often the archaeologist must reconstruct such decisions from patterns in site placement and then compare sites of similar function across different periods to ascertain if priorities in site selection changed with time. This is a decidedly cultural ecology approach, but it forms a strong reciprocal relationship with the more phenomenological landscape approach.

Use of cultural ecology is also valuable because it permits a return to the modern perception of shore and political ecology. There is growing scientific concern for the role of current and past human actions in damaging coastal and littoral environments (Walker 1990; Pauly et al. 1998; Steffen et al. 2004; Bourne 2006; Goudie 2006; Halpern et al. 2008). This concern has trickled into the archaeological community (Reitz 2004; Rick and Erlandson 2008) because, in addition to being remarkably productive, the coastal environment is among the most fragile and dynamic environments on Earth, making it difficult to separate archaeology in this region from questions of the environment and environmental change (Walker 1990; Head 2000).

Humans transform every environment they inhabit, and the coast, which aggregates both land- and water-based activities, is widely, intensively, and regularly affected by humans, both intentionally and otherwise (Bourne 2006; Halpern et al. 2008). Some of these alterations, such as land-making, sediment collection around groynes and piers, and stone quarrying, take place directly on the coast, but other impacts, including increased sedimentation from plowed fields and increased run-off from urban areas, are generated well inland. While the intensity of these human effects increased dramatically with the Industrial Revolution, there is ample evidence of human coastal alterations from antiquity (Inman 1978; Walker 1990; Wood 2000; Steffen et al. 2004).

The difficulty in parsing cultural and natural changes to the environment has led to an ecological approach among coastal archaeologists and many other scientists. In this approach, humans are considered within their environment, rather than above or external to it, and the complicated relationships between human and environmental actions and reactions are studied. The difficulty is that there is very little good ecological data prior to the 20th century, and most ecological studies span little more than a few decades. Consequently, most data begin well after humans had begun to drastically affect the environment and much of the data lacks a deep time dimension. Several archaeologists and historians have stepped into this void but many questions remain (Osborne 1990; Head 2000; Reitz 2004; Erlandson and Fitzpatrick 2006:18; McErlean 2007:92; Rick and Erlandson 2008; Starkey et al. 2008).

The ability of historians and archaeologists to contribute to this ongoing discussion is potentially one of their greatest assets to the general public. Focusing on the archaeology of Lake Ontario and exploring maritime landscapes will bring the study of past environments into the present by addressing how past actions have affected the current landscape.

CHAPTER III

SURVEY METHODS

> If historians are to attempt to write the history of mankind, and not simply the history of mankind as it was viewed by the small and specialized segments of our race which have had the habit of scribbling, they must take a fresh view of the records, ask new questions of them, and use all the resources of archaeology, iconography, and etymology (I would add ethnology) to find answers when no answers can be discovered in contemporary writings. (Hasslöf 1972b:11)

Olof Hasslöf's call to integrate archaeology, cultural geography, ethnology, and history into a holistic study of the maritime past has been the guiding principle of this work, as has Dries Tys's (2006) more recent attempts to integrate an under-documented site into the broader historical context through a similar interdisciplinary approach. More fundamentally, there is also an attempt to answer Jonathan Adams' (2006:2) appeal that "whatever the differences between land and maritime archaeologies with respect to environment and method, they do not and should not constitute barriers within theory, analysis and interpretation." In order to address these challenges, the methodology for this study was strongly influenced by the English Heritage approach (Fulford et al. 1997), as well methods that have been successfully employed elsewhere (McErlean et al. 2003; Breen and Lane 2004; O'Sullivan 2005; O'Sullivan and Breen 2007). Previously recorded archaeological data, archival data, cartographic data, environmental data, information from informant interviews, and data collected during a combined terrestrial and underwater survey were thus synthesized into a holistic cultural analysis of the Lake Ontario shore.

Historic Research

Background research and reconnaissance were conducted during 2006. This work included seven weeks of research at 20 repositories containing Lake Ontario historical and archaeological collections. The focus was on collecting existing archaeological data, historic cartographic information, and data regarding the cultural development of the lake margin. While the majority of archival research was conducted at this time, historical research continued throughout the project, taking advantage of local repositories during weather and rest days. Ultimately, 26 archives, libraries, collections, and historical societies were visited (Table 3.1), and other primary documents were viewed in private collections.

In addition to reviewing first-hand accounts and acquiring an understanding of the secondary historical literature for the region, a concerted effort was made to review the historic cartographic record. To that end, approximately 70 pertinent historic maps spanning from the early-17th century to mid-20th century, and ranging in scale from the Great Lakes region to specific islands, were reviewed. In general the earliest maps of the region were drawn by the French and depicted their entire area of concern extending from the Gulf of St. Lawrence to Lake Ontario, or in many cases the upper Great Lakes. Some of these maps were based on personal observation, but most were derived from the reports of Jesuits, explorers, *couriers de bois*, and Native Americans. It was not until the British became involved in the region during the French and Indian War (1755-1760) that detailed maps began to be produced. Maps showing individual structures were largely unknown until county atlases began to be produced during the 19th century (Mika and Mika 1985:248; Moodie 1985:32-33).

Maps are particularly important for the reconstruction of the past landscape because they record and identify features that no longer exist, and they provide a wider view of the historic landscape than is often practical to achieve in an archaeological survey. Furthermore, maps are a product of the culture and times of the people who produced them. Even maps that appear to be highly detailed and accurate neglect some aspects and highlight others. The features they emphasize and the names they assign to

TABLE 3.1
RESEARCH LOCATIONS

City	State/Province	Repository
Bowling Green	Ohio	Bowling Green Historical Collections of the Great Lakes
Vermilion	Ohio	Great Lakes Historical Society
St. Catharines	Ontario	St. Catharines Public Library St. Catharines Museum
Toronto	Ontario	Archives of Ontario Ontario Ministry of Culture Save Ontario Shipwrecks
Oshawa	Ontario	Oshawa Community Museum and Archives
Cobourg	Ontario	Cobourg Public Library
Kingston	Ontario	Marine Museum of the Great Lakes Cataraqui Archaeological Research Foundation Queens University Stauffer Library Queens University W.D. Jordan Special Collections
Ottawa	Ontario	Library and Archives of Canada Parks Canada
Marysville	Ontario	Wolfe Island Public Library
Clayton	New York	Antique Boat Museum
Sackets Harbor	New York	Sackets Harbor Battlefield State Historic Site Robert Brennan Collection
Oswego	New York	SUNY Oswego
Albany	New York	New York State Historic Preservation Office New York State Museum
Rochester	New York	Rochester Public Library
Niagara Falls	New York	Old Fort Niagara
Chaumont	New York	Lyme Free Library Lyme Historical Society

these features offer insight into how past people perceived their environments (Smith 2007). This characteristic of cartography is highly useful from a cultural perspective, but it also means that maps cannot be taken at face value. While the cartography of the Great Lakes improved during the 18th century, there was still a good deal of “cartographic license.” As a result, maps often misrepresented features that were only known anecdotally, repeated errors from earlier maps, and represented what the mapmaker wished was there rather than what actually existed (Mika and Mika 1985:251). Many of these errors are easily recognized today, but others reflected the cultural geography of the region and are far harder to compare with current conditions.

Since much of the following analysis is based on the spatial distribution of sites and features, it is worth noting that cartographic error is not solely a problem of historic maps. Canadian 1:50,000 National Topographic System maps require 90% of all points to be within 25 m of their actual location (Williamson 1994:16). The United States Geologic Service requires a similar level of accuracy, so that most points are within 12.2 m of their actual location (USGS 1999).

Survey Areas

Reference to historic maps gives substantial breadth to the study of cultural landscapes, but on-the-ground survey provides depth by recording sites and features that are not depicted on historic maps. Consequently, seven survey blocks, each 1 km square, were investigated along the northeast shoreline of Lake Ontario (Figure 3.1). Areas were selected for investigation based on the 2006 reconnaissance observations, as well as the presence of recorded archaeological sites and the probability of unrecorded archaeological sites, as indicated by historic documents, maps, and oral history. Surveys of these areas were conducted during two seven-week summer seasons in 2007 and 2008. The 2007 work centered on the New York shore of Lake Ontario from approximately Sackets Harbor to Cape Vincent. Specifically, the investigations focused on the protected shore of Wilson Bay (area 1 on Figure 3.1), Long Carrying Place on Chaumont Bay (area 2), the southern margin of Sherwins Bay (area 3), and the Storrs

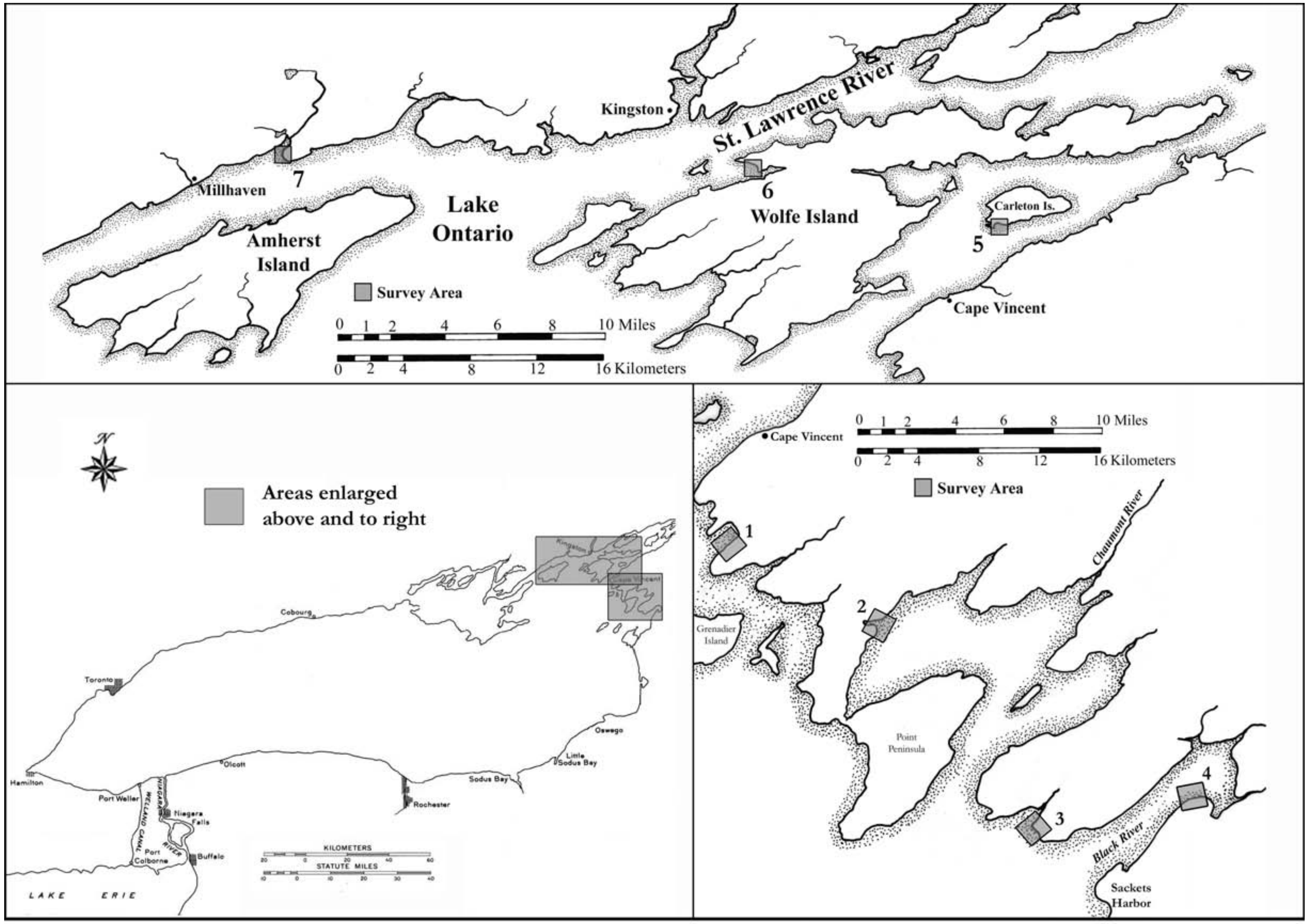

FIGURE 3.1. Survey areas.

Harbor area on Black River Bay (area 4). The 2008 work continued the survey from Cape Vincent, New York to Bath, Ontario. Specifically, the investigations focused on South Bay of Carleton Island (area 5), the northern terminus of the Wolfe Island Canal in Barrett Bay (area 6), and Nicholson Point and adjacent Parrotts Bay (area 7). The principal difference between the blocks selected for the 2007 and 2008 surveys was that the 2007 blocks, with the exception of Storrs Harbor, were selected based solely on their potential to contain unknown sites, while the 2008 blocks were selected because they reportedly contained known, but unrecorded, historic resources.

Each survey block extended approximately 1 km along the shoreline and 500 m on either side of the waterline for a combined total of 100 hectares. The seven survey areas of 100 hectares totaled 700 hectares in survey coverage with an approximately even split between submerged and exposed survey area. The survey work was conducted by 13 volunteer archaeologists, including professionals, graduate and undergraduate students, and amateurs.

Informant Interviews

The terrestrial component of the survey utilized walk-over survey methods bolstered by landowner and informant interviews. Initial contact with informants was made through letters and door-to-door canvassing. During the initial contact and subsequent meetings, the informant was asked a series of open-ended questions based on a standardized questionnaire (Figure 3.2) in order to identify archaeological sites on their property or adjacent submerged lands. Interviews with landowners, artifact collectors, local historians, and avocational and professional archaeologists were a primary means of gaining information about the surrounding landscape and proved to be very useful (Hasslöf 1972a; Roberts 1985:3; Ash 2005). As Edward Pollard (2008) found in Tanzania, archaeologically unknown sites are regularly recognized by local communities so that archaeologists do not in fact make discoveries but instead record histories that have not yet been written. In addition to yielding identifiable archaeological sites, interviews with informants generated a substantial database of anecdotal information

Thank you for taking the time to fill out the **Lake Ontario Maritime Cultural Landscape Project** questionnaire. This questionnaire is intended to gain information about the maritime heritage of Lake Ontario and the archaeological sites of the shoreline. New York State cultural resource laws state that all artifacts and sites situated on private property belong to the property owner. No artifacts, land, or property will be seized from you as a result of reported archaeological sites.

If you need additional space for any question, please do not hesitate to add additional pages.

1) Are there any archaeological sites on your property? Archaeological sites may include arrowheads, scatters of chipped stone, foundations, historic dumps, etc. If so, what types of sites are there? Please describe them in as much detail as possible.

2) Have you collected any artifacts from these sites? If so, what kinds? Feel free to describe or sketch the artifacts.

3) Would you be willing to show your artifact collection to an archaeologist and/or lead an archaeologist to the sites on your property?

4) Are you aware of any submerged sites in the lake or rivers near your property? If so, what types of sites are there? Please describe them in as much detail as possible.

5) Have you collected any artifacts from these sites? If so, what kinds? Feel free to describe or sketch the artifacts.

6) Would you be willing to show your artifact collection from these sites to an archaeologist and/or lead an archaeologist to these sites or describe their location?

7) Are you aware of any archaeological sites not on your property? These can be submerged or terrestrial sites on public or private lands. What can you tell us about these sites?

8) How long have you lived on your property? In Jefferson County? In the area?

9) How has the Lake Ontario shoreline changed during your lifetime?

10) What sort of activities do you and your family engage in on and around the lake, today and in the past?

11) Any other comments or stories about the history of Lake Ontario or this region?

12) May we quote portions of this questionnaire in publications?

13) Contact Information

Printed Name: ______________________________

Signature: ________________________________ Date: ____________________

Any questions or comments? Contact Ben Ford: 401-378-3262 or benford@tamu.edu

Thanks for your help!

FIGURE 3.2. Informant interview questionnaire.

that provided insights into how the landscape is currently viewed and how historical and archaeological sites have been reinterpreted. These interviews accessed aspects of the landscape that can not be measured or abstracted in maps and descriptions, but which are part of the lived landscape.

Private collections were also photographed and recorded along with any available provenience information. The collector was asked if possible to lead the archaeologist to the find spot, and the location was recorded using a hand-held Trimble GeoExplorer 3 global positioning system (GPS) unit. If the exact location was no longer known or was inaccessible, the artifacts were assigned to the largest collection unit, such as the field from which they were recovered, in order to avoid bias caused by memory errors (Roberts 1985:7). Interviews with artifact collectors not only benefited the current study but helped preserve the chain of knowledge (Shott 2008). In several instances, the death of a collector or the gift or sale of a collection broke this chain, so that very little information could be gained from the collector. In other cases, it was possible to speak with the original collector and record the approximate locations of finds, so that these became a component of the permanent archaeological record and could be at least partly interpreted.

Terrestrial Survey

During the interview process, landowners were asked for permission to investigate their property. On property where permission was granted, the work proceeded with a walk-over survey. The entire property was inspected by archaeologists, who walked parallel transects spaced 8 m apart along predetermined compass headings where feasible and potentially productive. This transect interval has been shown to identify 50 percent or more of most common artifact types (Banning et al. 2006). Particular attention was paid to plowed or otherwise disturbed areas, stream channels, the beach, and other locales where the subsurface is exposed. A similar survey in southern Ontario determined that there is often a close correspondence between surface scatters in plowed fields and archaeological features and materials beneath the plow zone (Roberts 1985:131). Artifacts and features identified during the walk-over survey were flagged and recorded the same day.

Recording included the use of the hand-held GPS unit, digital photography, and a written site description. A custom data dictionary was designed for this project to increase the speed and information content of the GPS recording. The GPS was set to record positions only if there was a minimum of four satellites and the position dilution of precision (PDOP) was less than 4, providing positional accuracy of approximately 3.8 m with post hoc differential correction (Pickle et al. 2004). Differential correction was completed using the Trimble Pathfinder Office software. In addition to recording artifact type, material, dimensions, and attributes, the artifacts were sketched and photographed. Concentrations of artifacts were mapped using tape and compass. No artifacts were collected due to the lack of a conservation budget and proper storage facilities. The promise to remove no artifacts also allowed greater access to the property of otherwise wary owners.

TABLE 3.2
SUMMARY OF MARINE REMOTE SENSING

Area	Planned Survey Lines (length in meters)	Actual Survey Lines (length in meters)	Possible Targets	Inspected Targets
Wilson Bay (area 1)	44,856	45,989	60	0
Long Carrying Place (area 2)	57,044	77,924	97	55
Sherwins Bay (area 3)	53,597	48,819	61	35
Storrs Harbor (area 4)	67,438	75,830	198	61
Carleton Island (area 5)	45,662	42,344	53	35
Wolfe Island (area 6)	42,821	31,888	21	19
Parrotts Bay (area 7)	41,842	31,238	37	26
Total	**353,260**	**354,032**	**527**	**231**

Submerged Survey

The marine survey consisted of side-scan sonar, magnetometer, and diver surveys paired with diver inspections of possible targets. The area from the waterline to a water depth of approximately 3 m was surveyed by archaeologically trained scuba divers swimming along transects perpendicular to shore (Crisman 1995). The transects were established by compass angle and visual offset from the previous transect aided by a safety diver stationed on the shore. Artifacts located during the diver survey were marked with a buoy and the position was recorded using the GPS unit. The unit was stationed on the shore and programmed with an offset bearing and distance based on measuring tape and compass readings. The maximum transect interval was 5 m; however, this distance was reduced in turbid water. In general, the transects were spaced so that adjacent transects visually overlapped.

In water depths greater than 3 m, marine remote-sensing equipment was employed (Table 3.2). This equipment was not used in shallower water because the effectiveness of the side-scan sonar, and, to a lesser extent, the magnetometer is reduced in water less than 3-m deep (Bell and Nowak 1993; Kane et al. 2004; Quinn 2005). Side-scan sonar provides a “photograph” of the lake floor by recording reflected acoustic signals. It is excellent for recording exposed shipwrecks, pier pilings, ship launching ways, or other bottom features, such as piles of ballast stone or locations from which natural stone was removed. The resolution of images produced by side-scan sonar are determined by range, horizontal beam width, pulse length (all determined by frequency), beam angle, and vessel speed (Fish and Carr 1990). The side-scan sonar (Marine Sonic Technology Sea Scan PC Desktop System) was operated at 600 kHz, with a swath of 40 m (20 m per channel) and a sample rate of four pings per second. Lane spacing was 15 m, and the vessel speed was maintained between 3.7–7.4 km/hr (2–4 knots). These parameters allowed the lake floor within the survey area to be imaged from two directions, providing 200 percent coverage and meeting or exceeding accepted high-resolution marine surveying protocols (Fish and Carr 1990; Quinn 2000; Fish and Carr 2001; Quinn 2005) (Figure 3.3). The side-scan sonar was suspended from the side of the

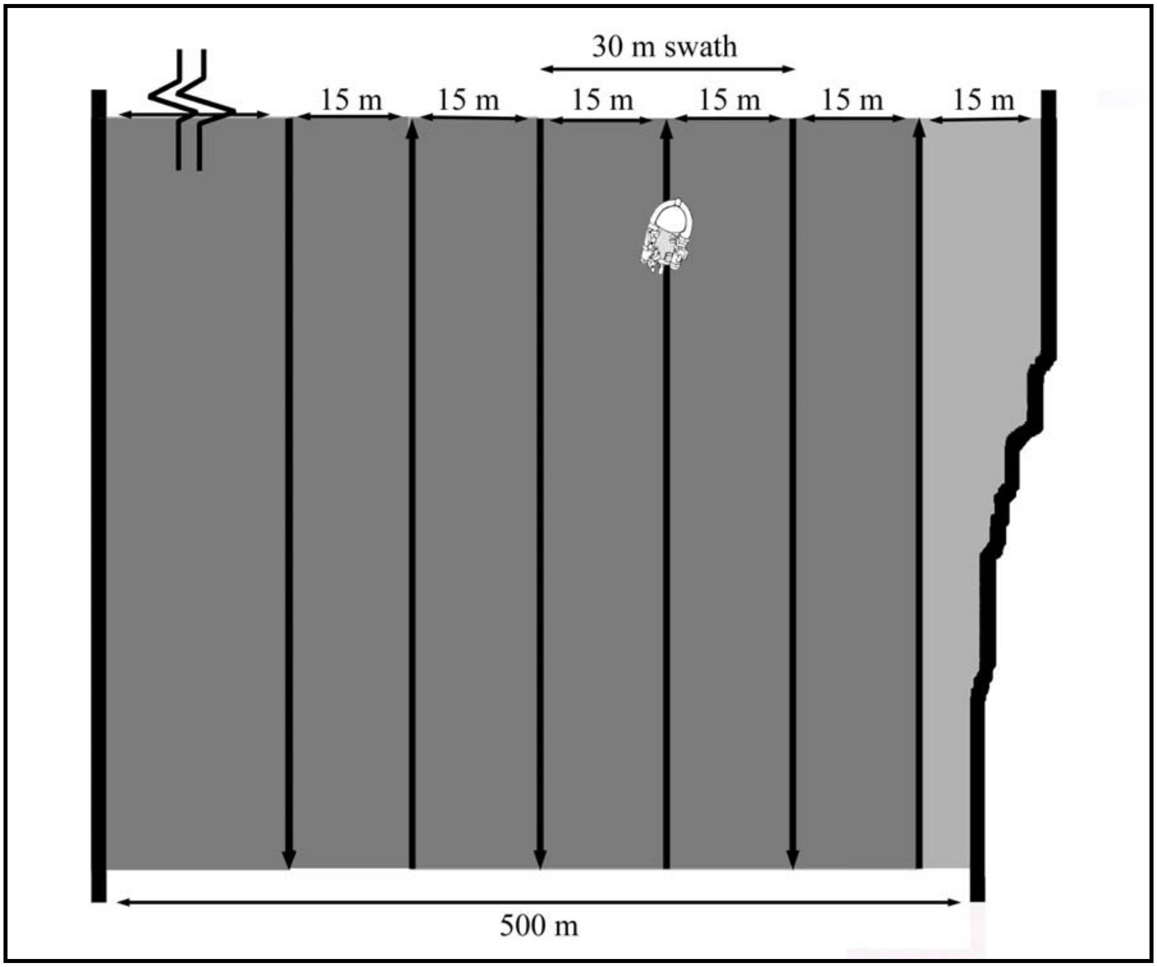

FIGURE 3.3. Schematic of marine remote sensing transect coverage.

5.5 m (18 ft.) Achilles SU-18 inflatable boat (Crisman 1987; Singh et al. 2000; Fish and Carr 2001).

Magnetometers record variations in the Earth’s magnetic field often caused by ferrous objects, concentrations of ferrous objects, or ferrous geologic deposits. As a result, magnetometers are excellent for detecting buried historical remains, such as the hardware deposited by deteriorated shipwrecks, wharves, or inundated structures, which tend to become buried in the sediment with little horizontal movement (Murphy 1990:16,53). The lower Great Lakes are well suited to magnetometer surveys because the Precambrian bedrock of the basin is overlain by a thick layer of low-susceptibility

Paleozoic sedimentary rock that creates little background interference in magnetometer readings (Boyce et al. 2001). The transect intervals described for the side-scan sonar also allowed for good magnetometer readings, permitting both pieces of equipment to be operated simultaneously (Gearhart 2004). The magnetometer (Geometrics G-882) was towed at the surface three boat lengths behind the survey vessel to maximize the ratio of unit height to transect width and to minimize the influence of the survey vessel on the magnetometer readings (Bell and Nowak 1993; Verboom et al. 2001). The surface position of the magnetometer was maintained through a combination of floats. The magnetometer was towed off the starboard stern quarter of the survey boat. In order to limit the opportunity for the tow cable to contact the prop, it was standard procedure to sequentially survey lines approximately 10 lines apart (for example, line 1, followed by line 10, then 2, then 11, then 3, etc.), so that all turns were broad and the magnetometer tracked to the inside of the turn.

All potential submerged archaeological targets were recorded digitally. The side-scan sonar images, as well as the magnetometer readings (often spanning multiple transects), were stored along with their geographic positions on the hard drives of the data collection computers. A console was built to contain the computers used to monitor and collect the remote sensing data. Navigation was provided by Hypack hydrographic survey software linked to a Trimble DSM 232 differential GPS. Hypack was run on a Panasonic Toughbook T8 and also served to log the magnetometer data. The Marine Sonic Sea Scan PC was also linked to the GPS so that both computers simultaneously recorded identical position data.

The GPS coordinates were used to return to the location and conduct a scuba diver inspection. Archaeological divers also used Garrett Sea Spy Mark II hand-held metal detectors to locate and assess magnetic anomalies. The divers recorded the nature, approximate date/period, integrity, and disposition of the target, in addition to collecting basic measurements and sketching the target, if it appeared to be archaeological.

Submerged pre-contact sites are notably difficult to identify due to their ephemeral nature and the accretion of sediments, and the remote sensing equipment was not well-suited to their detection (CEI 1986; Murphy 1990; Goldberg and Macphail 2006). Despite these difficulties, the possibility of locating submerged pre-contact sites or features was maintained throughout the survey, especially during the diver surveys. Insights into the pre-contact maritime landscape were also sought through indirect evidence such as natural communication lines, exotic goods, and maritime tools at terrestrial sites (Teigelake 2003; Pieters 2006:42-48). The goal of the survey, however, was not to provide definitive answers regarding submerged pre-contact sites; the survey was aimed, rather, to lay the foundation for a future focused study through environmental modeling, the recording of shoreline sites, and identifying exposed submerged artifacts (Burger and Todd 2006).

Variations in Survey Methodology

Due to the availability of special equipment, malfunctions in standard equipment, and safety considerations, the standard survey methodology was occasionally modified. The survey techniques used in each survey block and their arrangements are depicted in Figures 3.4–3.10.

While conducting informant interviews it came to the attention of the surveyors that individuals were becoming ill after swimming in Wilson Bay (area 1). Consequently, neither diver surveys nor target inspections were conducted in this area.

It was possible to work the magnetometer closer to shore and into areas with heavy aquatic weeds because it is not necessary to submerge the magnetometer and it is not greatly affected by marine growth. It was therefore possible to survey portions of the narrow bays at Long Carrying Place (area 2) and Storrs Harbor (area 4) with the magnetometer alone. The plants growing these areas, however, made it impossible to operate the survey boat motor. Consequently, these surveys were conducted from an aluminum rowboat propelled by oars (Figure 3.11).

While surveying off Carleton Island (area 5), the magnetometer suffered a massive malfunction that required four weeks of repairs at the Geometrics laboratories in California (the heating lamp required to heat the cesium vapor sensor stopped working).

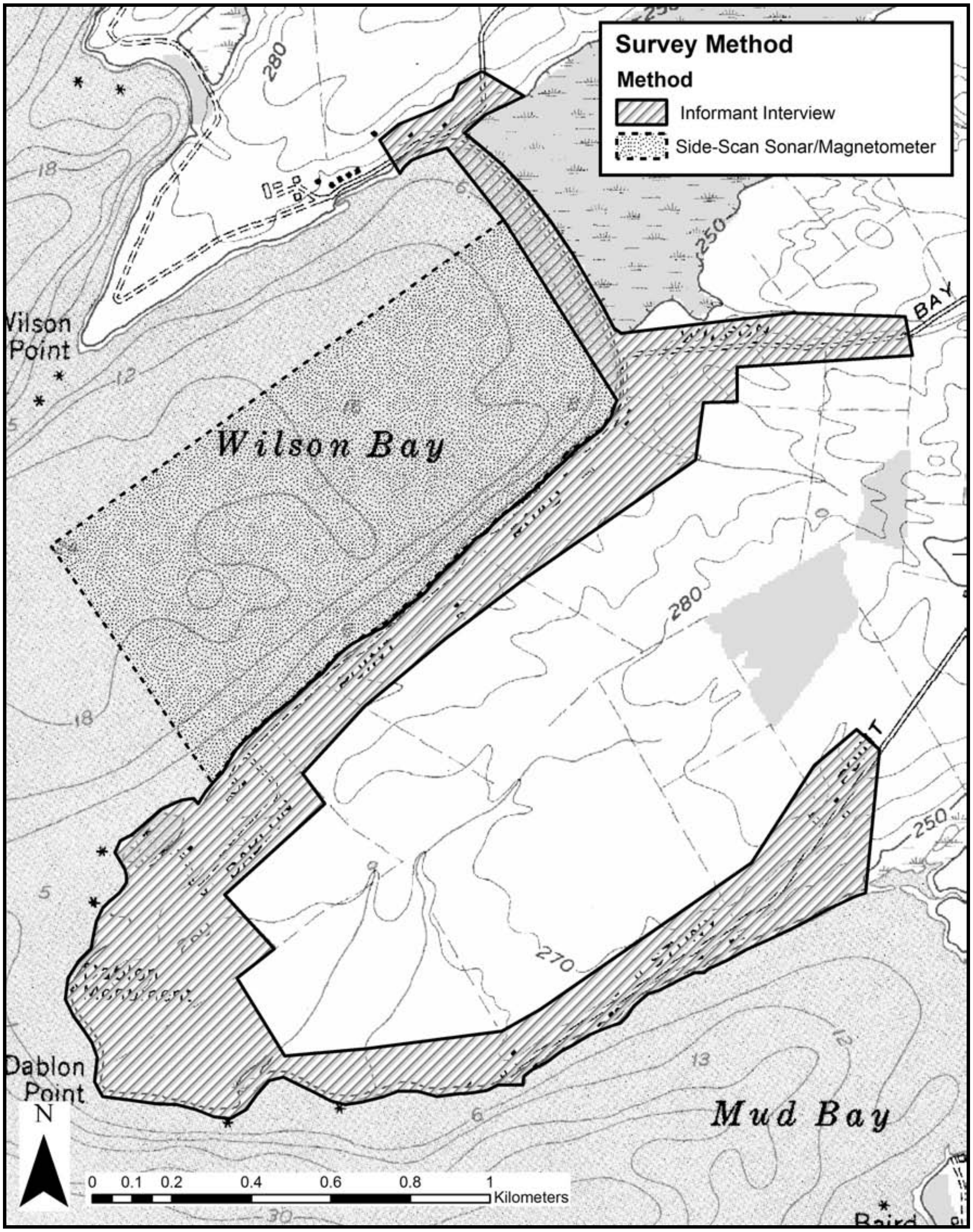

FIGURE 3.4. Survey coverage, Wilson Bay (area 1).

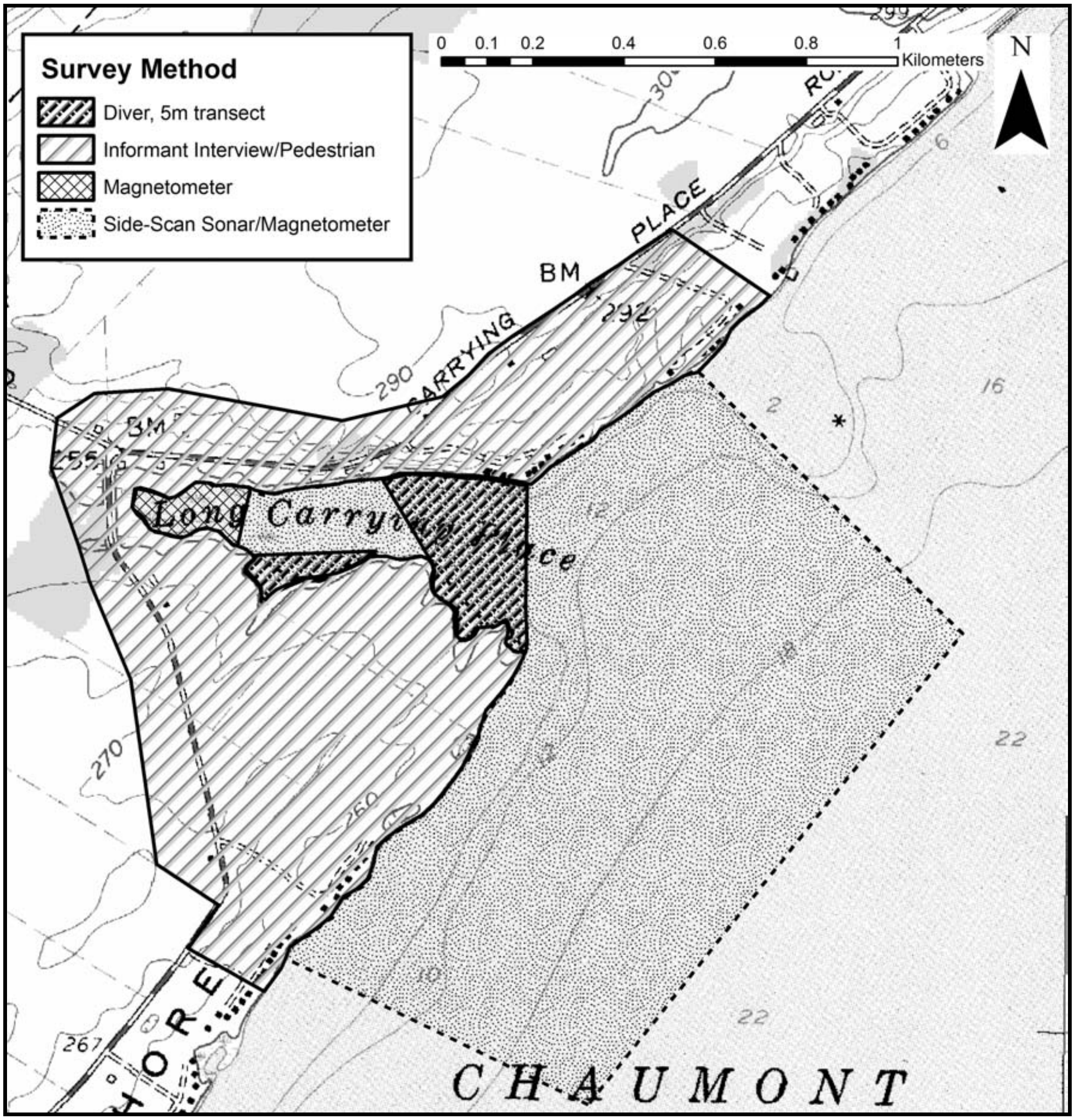

FIGURE 3.5. Survey coverage, Long Carrying Place (area 2).

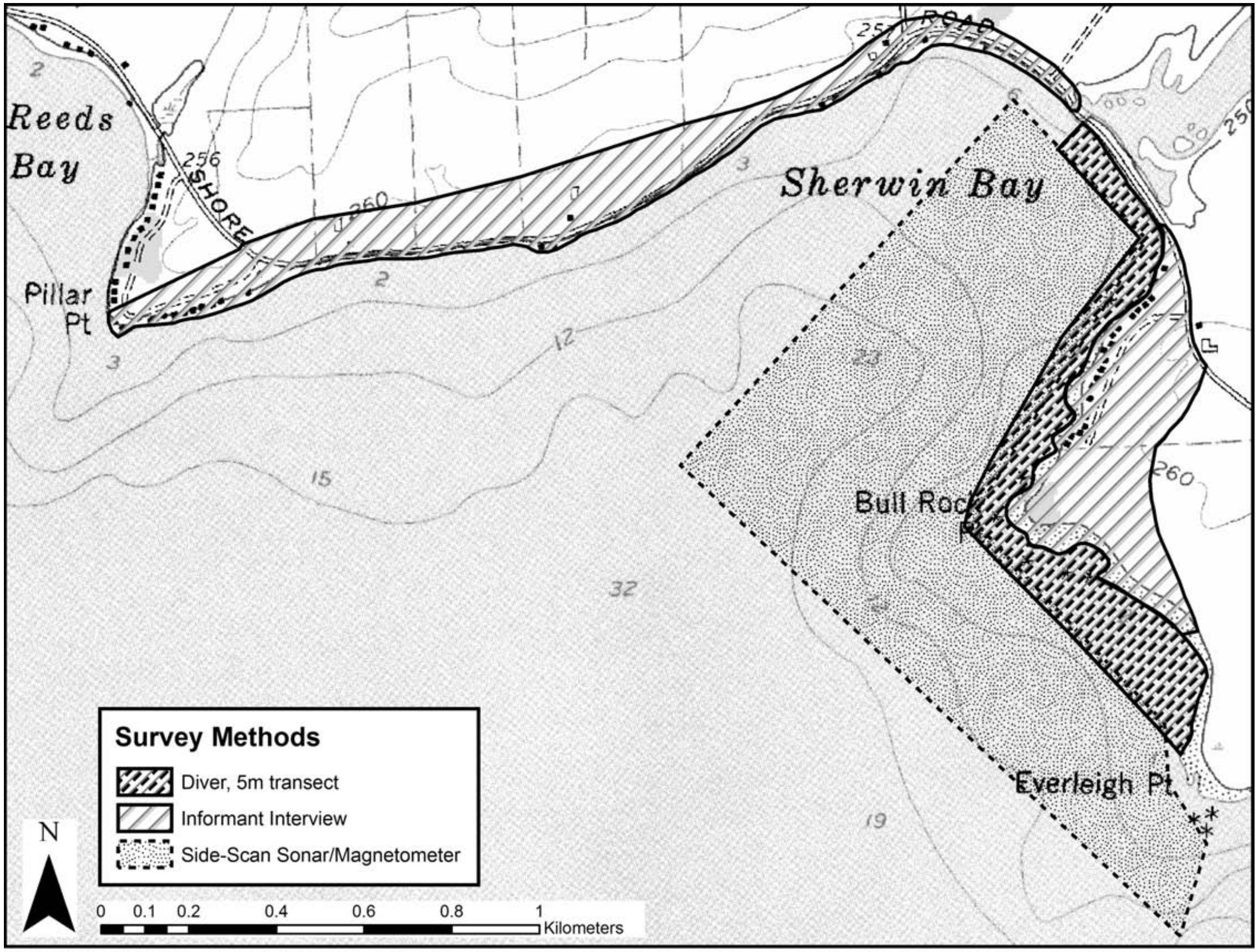

FIGURE 3.6. Survey coverage, Sherwins Bay (area 3).

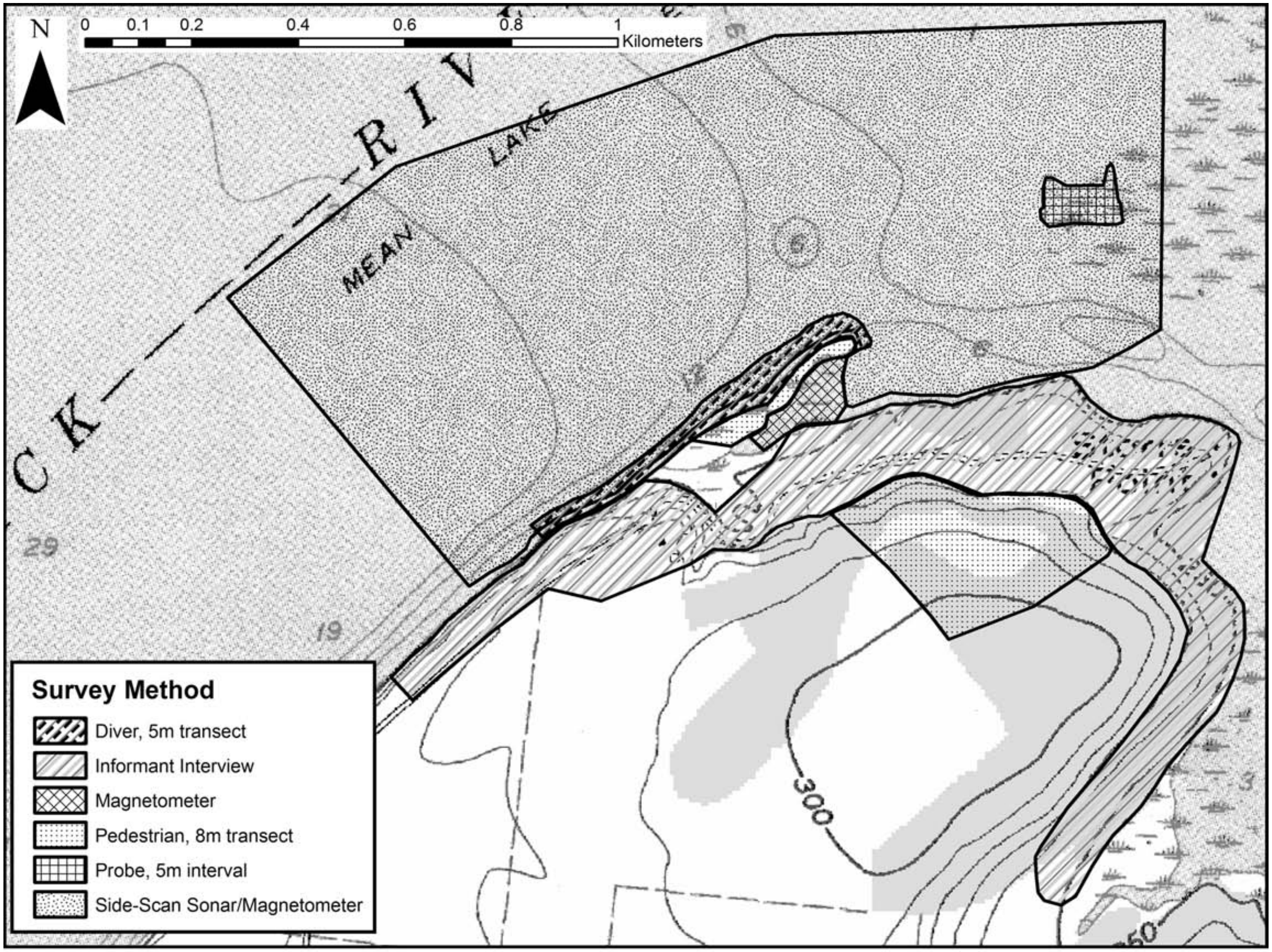

FIGURE 3.7. Survey coverage, Storrs Harbor (area 4).

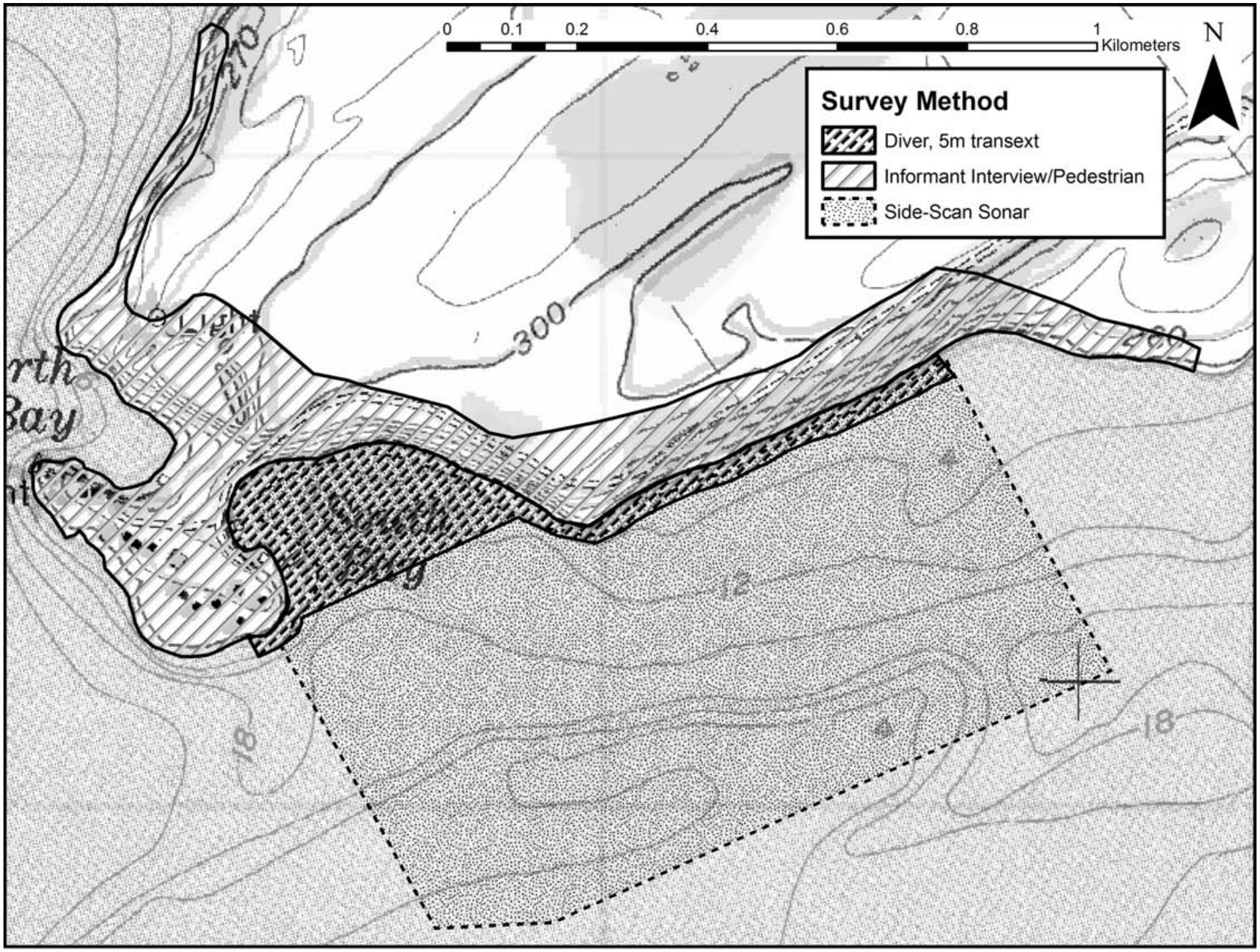

FIGURE 3.8. Survey coverage, Carleton Island (area 5).

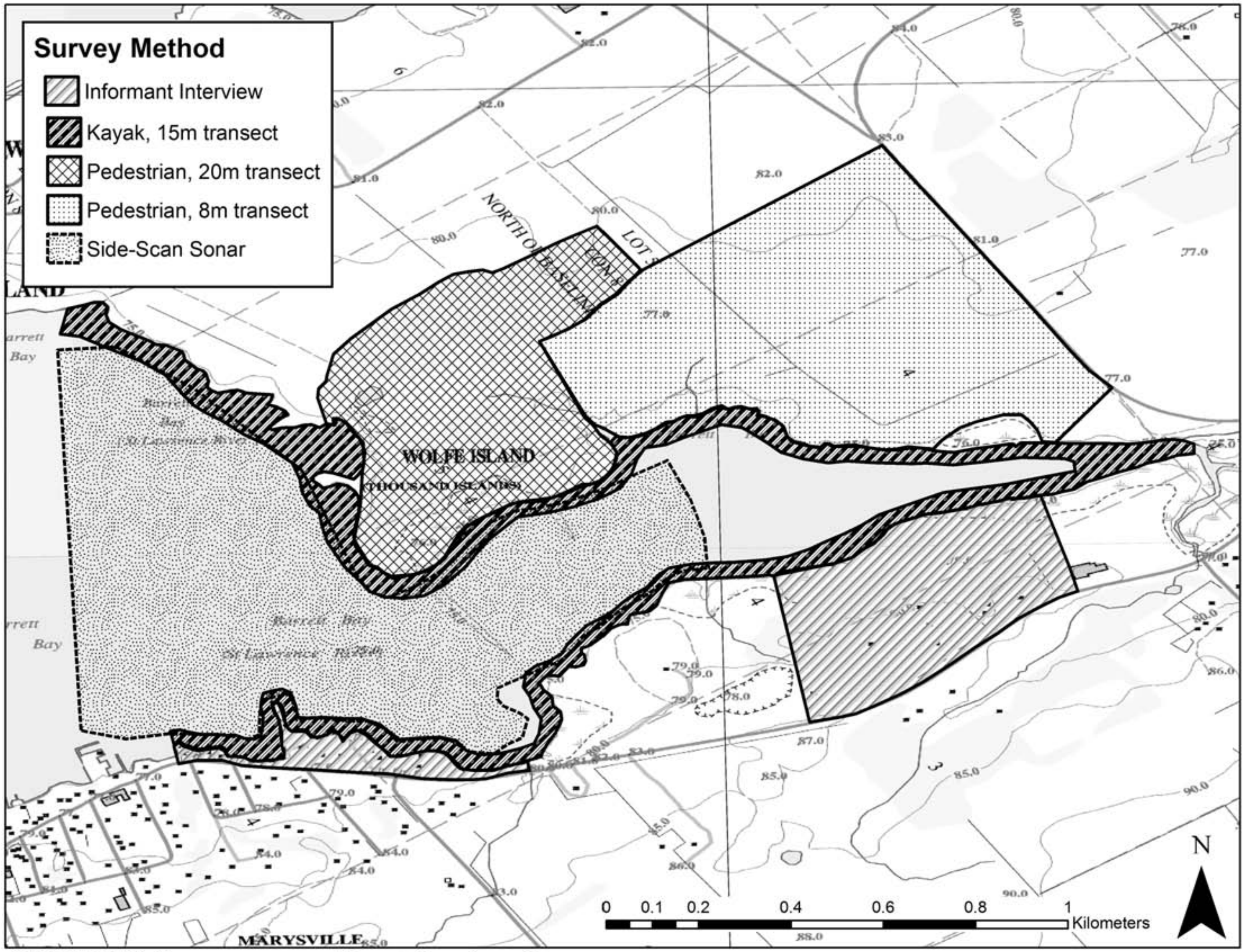

FIGURE 3.9. Survey coverage, Barrett Bay (area 6).

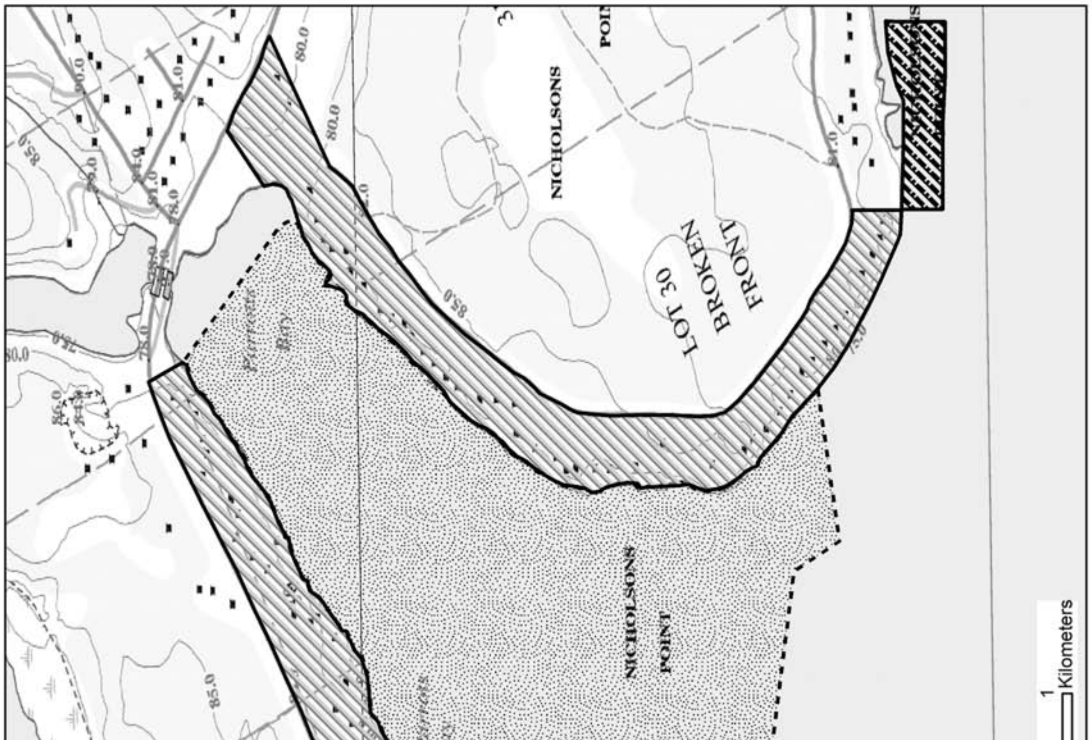

FIGURE 3.10. Survey coverage, Parrotts Bay (area 7).

FIGURE 3.11. Magnetometer survey from a rowboat.

The survey was partly delayed while the problem was diagnosed, but, once the extent of the repairs was known, it was decided to proceed without the magnetometer. A portion of area 5 and all of area 6 (Wolfe Island) were surveyed with the side-scan sonar only. As a partial remedy for this situation, the entirety of Carleton Island's South Bay was surveyed by divers along 5 -m interval transects. This bay was considered the most archaeologically sensitive portion of the survey block.

Visibility and shore access were limited along the shores of Barrett Bay, Wolfe Island (area 6). Consequently, scuba divers were used only to inspect targets and the near-shore survey was conducted by kayak. The kayaks were paddled approximately 10 m apart parallel to the shore. The kayaks were also used to survey the back of Barrett Bay to the mouth of the Wolfe Island Canal, an area choked with aquatic growth and inaccessible to the side-scan sonar. The purpose of the kayak survey was to identify shore structures rather than individual artifacts.

Finally, in order to explore the possible correlation between several magnetic anomalies and a shipwreck indicated on an historic chart (discussed fully in Chapter VIII), a probing survey was conducted within the Storrs Harbor survey block (area 4). The probe was made by fitting an Oakfield corer with a 1.8-m (6-ft.) long 1.2-cm (0.5-in.) diameter piece of all-thread (Figure 3.12). A 5-m interval grid was created in Hypack, and positions were acquired by manually moving a rowboat carrying the GPS, Toughbook, and an archaeologist until the desired location was achieved. The probe was then driven into the sediment by a diver wearing a drysuit but no tank or buoyancy control device. The results of each probe were recorded digitally and on a paper map.

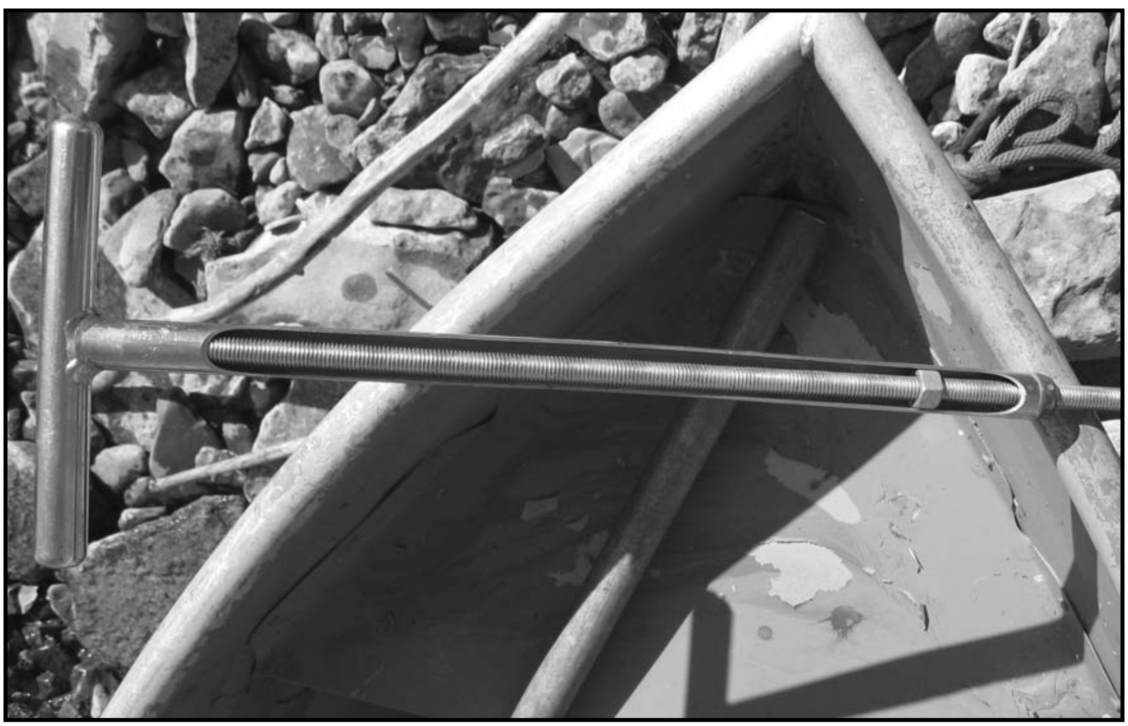

FIGURE 3.12. Oakfield corer modified for probing.

Data Analysis

Synthesis and analysis of the data were conducted using GIS software (ArcView 9 with Spatial Analyst extension). The full power of this software was not employed in this analysis; rather, it was used to synthesize previously recorded and digitized archaeological data (terrestrial and submerged, under data license agreement with New York State Office of Parks, Recreation, and Historic Preservation signed September 2006 and on loan from Ontario Ministry of Culture), historic cartographic data georeferenced ("rubber-sheeted") to modern maps as necessary (Rumsey and Williams 2002), data collected during the surveys, and topographic and bathymetric data. U.S. Geological Service 1:24,000 (7.5 minute series) topographic maps, Canadian 1:50,000 National Topographic System maps, and orthoimagery were used as the base maps. All other data were overlain to correspond to the base maps. The majority of the conclusions were reached through visual inspection of the data in this format.

Preliminary findings from this analysis was vetted with archaeological audiences at the Society for Historical Archaeology annual meetings (2007, 2008, and 2009), the Society for American Archaeology annual meeting (2008), the American Anthropological Association annual meeting (2008), and through a web journal on the Museum of Underwater Archaeology website <http://www.uri.edu/mua/>. Similarly, input from local communities was sought through presentations to the Wolfe Island Historical Society (2008) and the Jefferson County Historical Society (2007).

CHAPTER IV

ENVIRONMENTAL SETTING

> Great Lakes maritime archaeology is ultimately the study of cultural ecology: the interaction of humans and a unique freshwater maritime environment, the interplay of a range of cultural and geographic factors which produce technological and cultural change. (Cooper 1993:7)

Reduced to its most basic metrics, Lake Ontario covers 18,484 km^2, with a volume of 1,637 km^3, a mean depth of 86 m, and maximum depth 234 m. The lake is 311 km long and 85 km wide, drawing on a 89,717-km^2 drainage basin, while its shoreline bends and twists for 1,168 km (Fay and Fay 1927; Schertzer 2003; Holcombe et al. 2006). However, these numbers summarize modern Lake Ontario only at rare moments in time when its level coincides with the International Great Lakes Datum, set in 1985 at 74.65 m. The level and environment of the lake are today constantly in flux and have undergone massive alterations during the period of human occupation in the region (ca. 9000 B.C.-present). The rhythm of the perceptible fluctuations, as well as the dynamism of periods of lake-level change and the stability of times with little variation, substantially influenced the inhabitants of the lake's littoral and provide the foundation of this study. Humans are part of the biophysical system that they inhabit, and, like other animals, are inseparable from their environment. Culture as the means of human littoral adaptations will be discussed at length in the following chapters. The environment offers the circumstances with which culture is forced to contend.

Varying environmental forces, processes, and circumstances converge at different times and places, influencing the decisions made by individuals and groups (Head 2000:7-8; Costall 2006). From an anthropological perspective, the environment must therefore be understood in order to interpret how a culture used the landscape and adapted in the landscape. Therefore this chapter discusses the past and present conditions and forces that influence human life around the lake, spanning geology and climatology, as well as flora and fauna. Additionally, the environment must be understood for even the most basic archaeological analysis to take place, in this case the relationship between the site and the shore, as the current situation of many sites belies their association with the ancient shore (Fulford et al. 1997:12). The rise and fall of Lake Ontario and its predecessors means that many littoral sites are submerged or far inland from the current shore, while others near the water today originally stood far from the water. Without a firm understanding of the changes in lake level it would be difficult to define and interpret littoral sites.

Formation of Lake Ontario

The Lake Ontario basin was formed by glacial scour and sub-glacial meltwater erosion acting on an existing river valley and fluvial drainage system. Underlying the basin is southward dipping and southward thickening Queenstown shale overlying harder Ordovician limestone. Due to this arrangement, the basin is deepest along its southern margin where more of the shale was eroded prior to reaching the erosion-resistant limestone (Casey et al. 1965:2-6; Lewis et al. 2000:5; Coakley and Lewis 2003:63; Holcombe et al. 2006:4). The northeastern portion of the lake, in the vicinity of the archaeological survey areas, is typified by several shallow (generally less than 40 m) basins (Holcombe et al. 2006:21).

While the basin has not changed drastically since the end of the Wisconsin Glacial Episode, the water level that it contained has fluctuated significantly due to changes in flow rates. Approximately 10,500 B.C., the retreating glacial ice sheet blocked the St. Lawrence River channel and caused the water in the Lake Ontario Basin to rise, forming Lake Iroquois (Figure 4.1). This lake persisted until ca. 9800 B.C. and reached a height of 35-40 m above the current level before finding an outlet through the Mohawk River in the vicinity of Rome, NY (Sly and Prior 1984:815; Anderson and Lewis 1985:247; Roberts 1985:21; Crowder et al. 1996:123; Coakley and Lewis 2003:65). This high water resulted in a shoreline roughly paralleling the modern shore but several kilometers inland. As the glaciers continued to retreat, the St. Lawrence

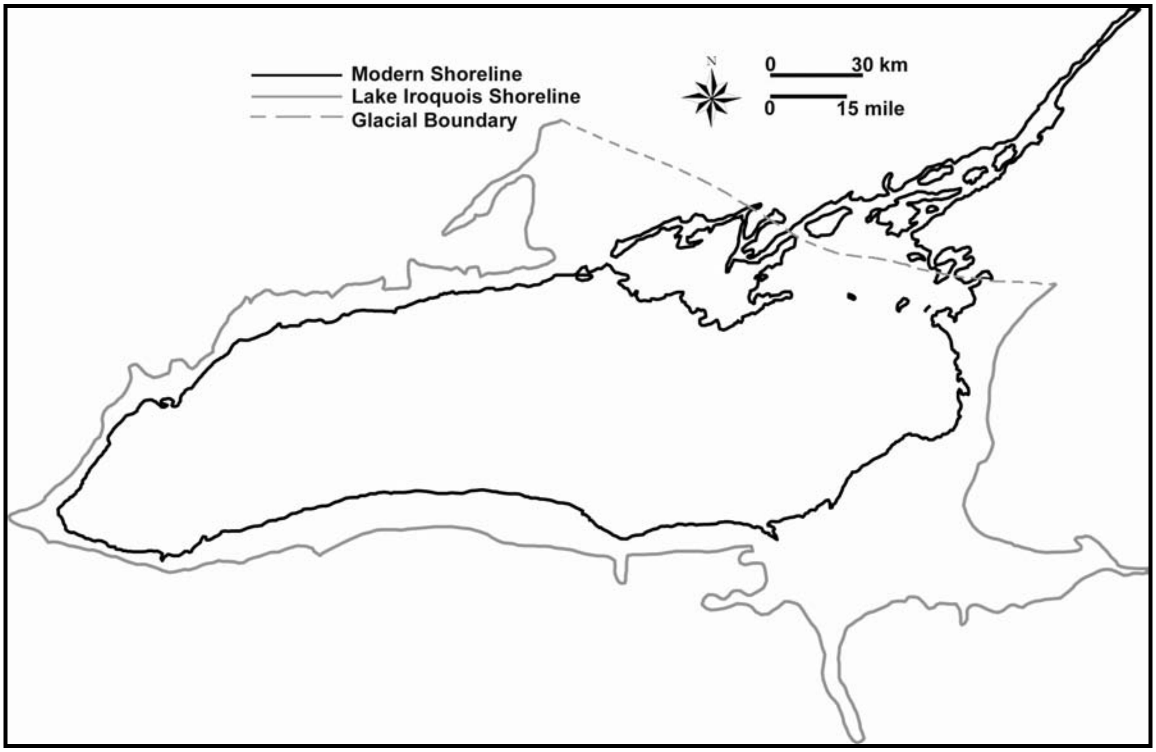

FIGURE 4.1. Lake Iroquois superimposed over current Lake Ontario.

opened between 9800 and 9700 B.C. allowing Lake Iroquois to drain. The water fell in a stepwise fashion as the lake surface encountered and eroded various sills (Spencer 1882; Tinkler 1994; Williamson 1994; Coakley and Lewis 2003). The terraces and bars left behind by Lake Iroquois and its fall have been incorporated into the local transportation network, largely because they offer level and well-drained surfaces to act as road beds. Thus a barrier bar near the west end of Hamilton Harbor was used for highway and rail access to the city of Hamilton (Coakley and Lewis 2003:65), and both Highway 81 through the Niagara Peninsula and Highway 401 between Cobourg and Trenton follow Lake Iroquois shorelines (Tinkler 1994:24-25; WRT 1995:2-4). At a smaller scale, the town of St. Catharines, ON was built on the Homer Bar of Lake Iroquois, with the individual streets of St. Paul, King, and Church each following an individual bar of the larger shore (Tinkler 1994:24).

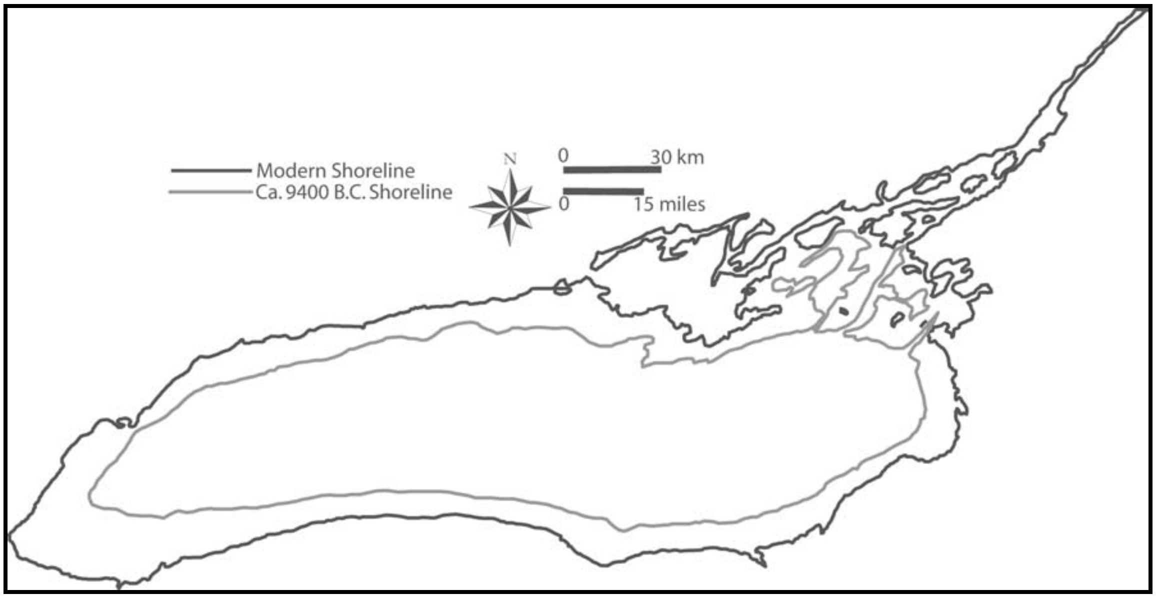

FIGURE 4.2. Lake Ontario at lowstand, ca. 9400 B.C.

With the ice dam removed from the St. Lawrence drainage, the level of Lake Iroquois fell quickly, reaching a low stand approximately 60 m below the modern level by ca. 9400 B.C. (Figure 4.2; although some estimate water levels as much as 100 m below modern) (Roberts 1985:25; Crowder et al. 1996:123; Coakley and Lewis 2003:32). Regardless of the exact drop in elevation, Paleoindian peoples moving into the area as the glaciers retreated would have noticed the falling lake levels within their lifetime. These people would likely have contended with rapidly shifting water resources as the lake grew ever smaller. Eventually the lake covered only 6,700 km^2, approximately 33.5% of its current size, placing the north shore nearly 10 km offshore of the modern shoreline and the west end of the lake more than 12 km east of Hamilton (Roberts 1985:67, 88).

The southern Great Lakes area was entirely deglaciated by 8500 B.C., allowing the upper Great Lakes to drain out the St. Lawrence River via the Ottawa River (Roberts 1985:22; Tinkler 1994:25). This drainage pattern diverted water around Lake Ontario and kept lake levels low. The retreat of the glaciers also removed an oppressive weight from the region, initiating the process of isostating rebound, or glacial uplift, that caused the ground surface to rise relative to areas that had not been glaciated. The amount of uplift depended on the amount of ice that had buried the area and on the elapsed time since the glacier had retreated, leading to differential rise throughout the Great Lakes and the eventual establishment of modern Lake Ontario.

By approximately 3000 B.C., continued isostatic rebound led to a breach in the Port Huron moraine, allowing the water of the Upper Lakes to drain into Lake Erie and then into Lake Ontario. This was not necessarily a smooth rise, due in part to the Lyell/Johnson Ridge along the Niagara River, which acted as a temporary dam to water flowing from Lake Erie, and to some lag between the beginning of flow and noticeable changes in the lake levels. Eventually, however, a significant influx of water, known as the Nipissing Flood, reached Lake Ontario and brought it to its modern level by ca. 2000 B.C. (Sly and Prior 1984; Anderson and Lewis 1985; Tinkler 1994; Williamson 1994). While the exact timing and nature of this rise remain the subject of some debate, with Sly and Prior (1984:819) arguing that the lake level crested near the modern level at 2000 B.C., and Anderson and Lewis (1985:245) suggesting that the lake passed the modern level by a few meters ca. 2000 B.C. before falling to a near modern level, the change in the environment would have no doubt been drastic and noticeable. The Archaic peoples living around the lake would have been faced with fast-rising water inundating much of the lands that they had inhabited. In the Kingston Basin, which dominates the lake floor in the vicinity of the archaeological survey areas, the nearly empty Lake Ontario basin would have been covered with small lakes and large wetlands drained by a river system flowing to the east. As the water in the basin as a whole rose, these wetlands and lakes would have expanded to form ever-larger bodies of water until the basin was entirely filled (Anderson and Lewis 1985:247; Crowder et al. 1996:123). The rising waters also drowned the rivers and creeks flowing into the basin, creating around the lake estuaries and embayments that would be used by all subsequent cultures inhabiting the lake's margin (Tinkler 1994:25; Moore 1995).

Isostatic rebound continues to affect the region, with the eastern basin rising between 18 and 30 cm per century relative to the western basin (Tinkler 1994:25;

Crowder et al. 1996:125; Coakley and Lewis 2003:69). This differential rise has the same effect as tilting a pan of water: as the east basin rises, the west basin becomes deeper. As a correlate of this relationship, the western shore is slowly being inundated as the eastern shore gradually becomes more exposed. Thus, the ca. 2000 B.C. shoreline along the eastern littoral of the lake is slightly above the modern lake (Swayze 1997:2-3) but the mid-18th century A.D. shoreline of Fort Niagara is now inundated (Knoerl 1994:90). These slight changes in the water level bear significantly on site preservation along Lake Ontario's shore, as some sites are moved away from the erosive power of water and ice while others are slowly frittered away.

Lake Level and Currents

Despite these past fluctuations, modern Lake Ontario is an open lake (exorheric) with a relatively stable amount of water flowing in from Lake Erie, the surrounding drainage basin, and precipitation falling directly on the lake, balanced by losses down the St. Lawrence River and to evaporation (IGLLB 1974b; Goldberg and Macphail 2006:112). The flow of these inputs and outputs creates a generally counter-clockwise current within the lake (Konrads 1963). However, even with relatively balanced inputs and outputs, the lake is affected by long-term, seasonal, and short-term fluctuations that have noticeable influences on the lake level. Seasonal fluctuations are the most regular, with an average 0.6 m difference between spring high-water and autumn low-water levels, although seasonal differences greater than a meter have been noted (e.g. 1867-1868 and 1943-1944) (Blust 1962:138; Konrads 1963:10; IGLLB 1974a:7; CHS 2005). Overlying the seasonal rise and fall of the lake are long-term (multi-year) fluctuations generally associated with persistently high or low precipitation in the Great Lakes Basin as a whole. For example, anomalously heavy rains during the 1895-1908 period led to a nearly 1 m rise in Lake Ontario, which eventually fell as precipitation returned to normal (Blust 1962:137). In addition, Lake Ontario has a not-well-understood 30-year period with maximum high and maximum low levels approximately 15 years apart (Annin 2006:42). Finally, short-term fluctuations, usually on the order of a few days, are often caused by high winds forcing water into an embayment or against the shore. These brief changes in level can be as much as 0.6 m and are offset by a corresponding drop in the water level elsewhere in the lake (Blust 1962:138).

Often these lake-level cycles are out of synch with each other, helping to maintain a nearly constant shoreline. However, it is possible for the cycles to align and cause anomalously high and low water levels. The maximum recorded height of the lake is 75.6 m, as compared to the average elevation of 74.6. This record was set between 1860 and 1873, but was nearly equaled in 1952 and 1973, with notable, but less drastic, floods in 1886 and 1947. The minimum recorded elevation of Lake Ontario is 73.6, set in 1964 (Anonymous 1973a, 1973b; Washburn 1973; IGLLB 1974a:4). While exact measurements are not available, early residents along the lakeshore noted similar changes in the lake level. For example, James Richardson (1916:27) recorded that the lake level rose 1.5 m within a few years of 1815. He claimed that based on soundings the water was 0.8 m deeper at Niagara, while Kingston wharves that were formerly 0.8 m above the water were inundated by 1816 and again by 1818, despite being rebuilt 0.8 m above the lake level. While this account is unsubstantiated, it does point to the difficulties with maintaining trade and communication along a fluctuating body of water. Docks that one year may be underwater could have insufficient draft at their ends a few years later. Changes in lake levels also influenced the ability of vessels to clear the bars at the mouths of most early harbors and the sills of canals in later years. In a modern example, for every 2.5 cm drop in lake elevation, a 305-m freighter must shed 270 tons of cargo in order to pass through a canal lock. The loss in freight causes an associated loss of efficiency in transportation and a rise in the costs of materials shipped through the lakes such as steel and coal, eventually effecting products such as domestic electricity and automobiles (Annin 2006:18).

Partial control of fluctuations in lake elevation was a benefit of the St. Lawrence Seaway (St. Lawrence Power Project). The Seaway was completed in 1958 and began regulating flow in 1960, letting through more water in times of high water and less during low-water periods. This mode of control has been generally successful, despite anomalously high and low water periods during the 1960s and 1970s, and has maintained the water level at a slightly higher level than the natural (historical) average (Blust 1962:139; GLSC 2004). While the increased water depth has benefited shipping, there have been some unintended environmental consequences, such as permitting cattails to invade meadow marsh habitats (GLSC 2004).

Erosion

The continuous rise and fall of the lake, combined with the slow tilting of the lake basin towards the west, and other factors such as wind, waves, and ice have led to considerable erosion around the lake margin. This effects not only those who have lived in the littoral zone but also the survival of their archaeological remains. The primary factor in the rate and shape of erosion along the shore is the controlling substrate, the material that makes up the main body of the lakebed and shore in any given region. Erodible bedrocks (such as shale or limestone in Lake Ontario) and cohesive deposits (glacial or lacustrine deposits) are prone to irreversible erosion and downcutting, while deep sandy deposits may be either eroded or accreted depending on the movement of sediments (SMWG 1996:7-8). The shore of Lake Ontario is made up of 67% erodible bedrocks and cohesive deposits and 20% sandy deposits, with an additional 10% dominated by non-erodible bedrock and 7% of land-fill or armored shore (Coakley and Lewis 2003).

Acting on these substrates are the primary factors of water level and wave action, supplemented by forces such as ice action, water runoff, raindrop impact, frost, ice gouging, and chemical weathering, as well as shore characteristics including height, slope, and vegetation. The uneven distribution of these factors and controlling substrates leads to highly localized and widely variable rates of erosion, ranging from 0 to 1.7 m/year of loss within a 7 km area (Pincus 1962:125-131; Amin 1982:31,34). The average recession of the lakeshore is 0.3 m/year (0.5 for the U.S. shore), but far higher rates have been recorded for areas such as the Niagara Peninsula (averaging 0.6-3.7 m/year, with massive losses as great as 10.7 m/year) and Scarborough Bluffs (averaging

0.8-2 m/year with massive losses as great as 15 m/year) (Amin 1982:2-3; McGillivray 1988:3; WRT 1995:2-5; Coakley and Lewis 2003:75,85). The recession of the shore in the area selected for archaeological survey is significantly lower than these areas and the lake average in general. Largely protected from wave action and wind-driven ice, many of the survey areas approach 0 m/year shore loss.

Furthermore, the erosion of the shore is not a simple equation of net loss, even in a small geographic area. Rather, the nature of the backshore and the area’s sediment budget play a strong role in how erosion will shape the shore. For example, where the backshore is significantly higher than the water, eroding bluffs are created, making water access difficult; but where the backshore undulates perpendicular to the water, embayments are created between uplands, helping to focus human activities along the waterline. Often these headlands project out into the lake because the higher the bluff, the more cobbles and boulders it is likely to contain, providing a larger source of stable beach material to protect the base of the bluff, while lower and less protected portions of the shore are eroded (Pincus 1962:132-133; SMWG 1996:10). The movement of sediments eroded from one area and deposited elsewhere also plays a role in the formation of the shore. Sediment movement follows the generally counterclockwise current of the lake. In many cases the amount of sediment removed is balanced by new sediments taken from up-current. However, wherever the lakeshore changes alignment, the capacity of the current to carry sediment is reduced, resulting in more incoming than outgoing sediment. This process creates stable beaches where the sand is deposited but also leads to the sediment starvation of other areas, leading to a net loss of shore in those locations. The change in shore alignment that causes deposition may be natural, such as an embayment or headland, but may also be a man-made structure, such as a groin (McGillivray 1988:1,4; SMWG 1996:11).

In general, except in instances where a large segment of shore calves off into the water, the process of erosion is too slow to be directly perceived by humans but is noticeable within the span of a human life. For example, Bluff Island (Oshawa Island), near Oshawa, Ontario, was initially Bluff Point. In 1800 the point consisted of a 100 acre grove that was reduced to approximately 40 acres by 1842 and cut off from the mainland by a low, marshy area in 1857. By the mid-20th century the island had been eroded to nothing more than a shoal (Stephson 1966; OCMA [1985]). Similarly, when the French Castle at Fort Niagara was built in 1727 it stood 55 m from Lake Ontario. However, by mid-century erosion became a concern and the French attempted to stabilize the shore with a timber revetment. The problem was sufficiently severe that the French even contemplated moving the fort but decided to continue to battle nature because it was ideally located on a Native American trade route. The British inherited the problem of erosion when they took the fort and eventually built a wooden revetment and stone-filled wooden-crib seawall and dock ca. 1762. The Americans, similarly, had soldiers and engineers constantly employed in repairing and securing the shore (Scott and Scott 1986:1-3).

Ice

Ice is one of the forces acting on the lakeshore to cause erosion. It also directly influences cultural adaptations by halting vessel trade while opening the water to pedestrian and vehicle transportation. Ice usually forms on Lake Ontario in mid-December and is cleared enough to reopen transportation by mid-March, although in particularly bad years it may linger well into April. The ice generally covers only 25% of the lake; the frozen quarter however lies along the shore and includes the lake ports. With the ports frozen, vessels are able neither to leave nor to enter and transportation on the lake is effectively halted (Anonymous 1856; Pound 1945:20,251; Anonymous 1963a; Myers 1989 [1843]:56,58-59; Moore 1995:8; Jensen 1997:57; Schertzer 2003:17). Similarly, the shallow waters of the Welland Canal, which fed the commerce of Lake Ontario for much of the 19th century, tended to freeze earlier than the lake itself, ending inter-Lake trade a few weeks before the official freeze (Monk 2003:62). With the lake closed to navigation, many people crossed the water on foot, using the shore ice as a welcome alternative to the often poor roads. Transportation on the ice included not only foot (with or without ice-skates), but also carts and carriages, moving people and produce throughout the basin. As discussed in later chapters, transportation across the ice forms a major, if ephemeral, portion of the Lake Ontario maritime cultural landscape.

Storms

Storms, along with ice, are among the defining features of the Great Lakes, setting them apart from both oceans and smaller lakes. Much has been made of the storms on Lake Ontario, with Basil Hall (1829:354) preferring not to be "drowned like a kitten in a pond," and Alexander Wilson (1824:55) waxing poetic about the ocean-like character of Lake Ontario in its "sky-bound bed." Other early travelers to Lake Ontario, including Chambers (1968 [1854]:98-99), Milbert (1968[1828]:148), and Murray (1969 [1856]:105), noted the ferocity of storms on the lake. However, the most eloquent summary comes from Sir Richard Bonnycastle in 1846: "…we were at sea on Lake Ontario, the 'Beautiful Lake,' which, like other beautiful creations, can be very angry if vexed" (Barry 1996:61); and the most pithy, from Harold Alford (1957c:310) who wrote: "Old salts might scorn the fresh water of Ontario, but there is no record of any complaint that the gales, blizzards, squalls and thunderstorms over this Lake were not sufficiently boisterous to hold the interest or test the seamanship of any sailor."

Alford wisely avoided stating that Lake Ontario storms were altogether fiercer than those experienced on the oceans, as an inland sea offers less fetch for winds and waves than its saltwater cousins. However, two factors make Lake Ontario and other Great Lakes storms more dangerous than simple wind speed and wave height would suggest: unpredictability and lack of searoom. The historical evidence suggesting that the majority of shipwrecks occurred late in the year (Knowlton 1892; Palmer [1990]), is supported by a statistical analysis of the seasonality of 456 Lake Ontario shipwrecks drawn from the Northern Shipwreck Database. Directional statistics performed on counts of the months of loss demonstrated that it was highly unlikely that the temporal pattern of vessel loss was random (Rayleigh's Test: $p \leq 0.01$; Chi^2: $p < 0.001$). A graph of the period of loss (Figure 4.3) indicated relatively few vessels were lost during mid-winter when the lake was frozen and during mid-summer when weather was generally benign.

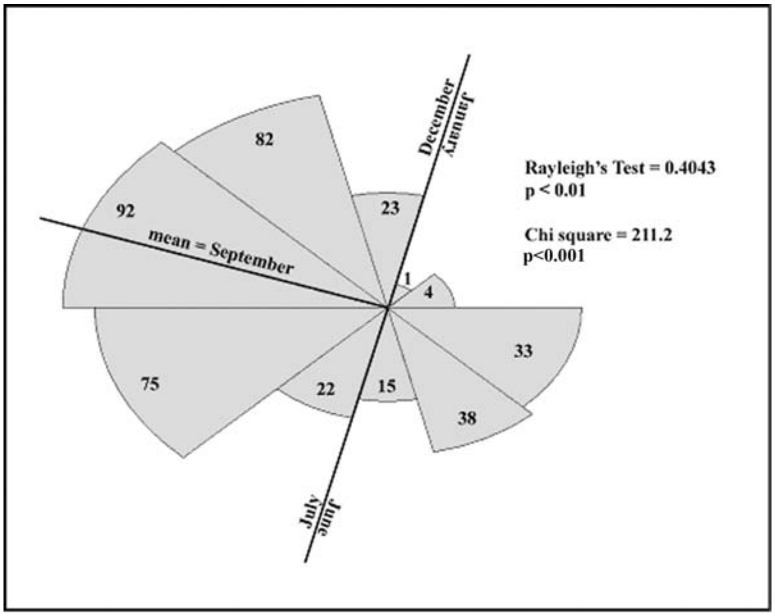

FIGURE 4.3. Equal area graph of total wrecks per month.

However, as the autumn progressed into winter, the number of shipwrecks increased significantly before decreasing with the number of vessels plying the lake immediately before the expected yearly freeze. Despite the dependability of poor weather late in the sailing season, storms often arise quickly as a result of the meeting of two air masses over the lake, giving sailors little time to react. The classic example of this phenomenon is the loss of *Hamilton* and *Scourge* on 8 August 1813. While becalmed at night with much of their sail set to catch any breeze, the ships were struck by a sudden gale and sank in minutes (Myers 1989 [1843]:81-87). Herbert Holtham witnessed a similar event in the 1820s when a squall threw a schooner on "her beam end and in 5 minutes she was totally sunk" (Holtham 2000 [1831]:103). Additionally, many of the storms on Lake Ontario are accompanied by gusty winds, rather than a consistent gale, which makes it harder for the seamen to react and ride out a storm. The ship itself also has less time to react to storms on the lakes, due to the shorter wave cycles. Waves on the Great Lakes tend to come in quicker succession than ocean waves, so that vessels have less time to right themselves between waves (Palmer 2003:42).

Adding to the problems of Lake Ontario vessels beset with fast moving, gusty storms and battering waves is the lack of space to maneuver. Lake captains were always on a lee shore with no searoom and lacked the options of running ahead of the storm indefinitely or heading out to sea to allow the storm to pass (Lenihan 1987:20; Palmer 2003:41). Lake sailors running with or from a storm would always eventually run out of open water and find themselves on an unfriendly shore, as an 1886 *Oswego Palladium* editorial expressed,

> On the Ocean, when a ship is overtaken by a violent storm there is plenty of room in which to maneuver. She can run before the gale for days or weeks if necessary, while on the lake, shelter must be found in a few hours' run. There are sunken reefs, rocky coasts, many small islands and harbors that are difficult of entrance… (Palmer 2003:41).

The dearth of suitable harbors, especially during the early periods of European settlement, compounded this difficulty. Much of the southern shore of the lake, stretching for 121 km west of Rochester, is devoid of deep natural harbors (Pound 1945:259), and many of the natural harbors along the northern and eastern margins of the lake were blocked with sandbars. Prior to improvement, these bars were often covered by less than 1 m of water and passable only at specific and shifting locations, not a welcoming entrance for a storm-blown vessel (Sheaffe 1794; Hughes 1993). As a result, storms, and the loss of life and property that they cause, have figured prominently in the history and culture of the Great Lakes, as has a desire for a greater degree of respect from ocean-going sailors for the difficulties of sailing their waters.

Lake Fauna and Ecology

Fish ranging from alewife (*Alosa pseudoharengus*) to whitefish (*Coregonus clupeaformis*) inhabit Lake Ontario, with different types taking advantage of separate niches within the lake environment. For example, members of the salmonid family predominate in the cold, deep waters of the lake, while lake trout (*Salvelinus namaycush*) and whitefish are more likely to be found in shallow water, especially where it is near deep water (SMWG 1996:13-14). Humans have generally adapted their fishing techniques to the economically valuable types of fish and, as a result, to the environments in which these fish live. However, advances in technology and changes in fish use and preference have led to changes in modes of fishing. Similarly, humans and other fauna of the lake are tied to the larger environment of the lake, with humans often having unintended consequences on other species. While overfishing is a direct, and arguably intentional, effect, the long-term repercussions of changes to the food web are not well understood today and were likely even more mysterious in the past. Similarly, changes to the lakeshore, such as removing stone for construction (stone hooking) and changes in the rate of sedimentation caused by farming and development, destroy the habitat of one fish community but may also open the area for a different fish community (Crowder et al. 1996:126; SMWG 1996:14). The interaction between humans and specific fish species, most notably whitefish, and the impacts of humans on the lake environment are taken up at greater length in later chapters.

Geology and Soils

The geology of the Lake Ontario shore was heavily influenced by the last glaciation. Beyond the formation of the basin, the glacier and its associated lakes deposited much of the overlying sediments (primarily clays and silts) that encompass the entire shore in the Erie-Ontario Lowland (Cressey 1966:33). North of the lake, the Oakridge, Dummer, and Trafalgar moraines, deposited by the glacier, form east-west ridgelines that can be interpreted as an expanded boundary of the Lake Ontario shore. Other moraines are situated south of the lake (Valley Heads, Lake Escarpment, and Hamburg) but are separated from the lake by the Niagara and Onondaga escarpments (Coakley and Lewis 2003:64). These escarpments were caused by differential long-term erosion leaving the hard limestones of the escarpments while softer surrounding rock was eroded, and are not a direct result of the glaciers. However, similar to the moraines north of the lake, they serve to bound the Lake Ontario region, influencing the cultural development of the south shore, and, in the case of the Onondaga Escarpment, providing lithic material for Native American tools.

More specifically, north of the Niagara Escarpment, Lake Ontario is bounded by a thin band of shale and shaly limestone and a thicker band of sandstone directly along the lakeshore. Along the eastern edge of the lake there is an area between Pulaski and Woodville, NY with shale bedrock. From Woodville north, through the archaeological survey areas, the bedrock is limestone (Cressey 1966:24). The north shore of the lake is based on sedimentary rocks similar to those of the south shore but with the Frotenac Axis, a spur of the Canadian Shield, continuing the band of limestone from the northern New York shore.

The soils within the region vary widely, but are all derived from glacial and lacustrine deposits, dominated by clay and silt. These deposits range from shallow to deep, with shallow deposits and exposed bedrock the rule around the northeast portion of the lake. Where deep enough to support crops and sufficiently well-drained, the soils tend to be productive for agriculture. It is, however, worth noting that the modern soil types do not coincide well with the original surveyors' accounts. The past two centuries have witnessed drastic changes to the drainage and other properties of much of the Ontario Basin soils, not the least of which is due to the draining of wetlands to create farmland. As much as 60-80% of the historic wetlands in eastern Ontario have been drained (Wood 2000:16-18).

Flora

The Lake Ontario shore has witnessed several forest transitions since the last glaciation, primarily as a result of climatic shifts. In the wake of the glacier, the area was dominated by a spruce forest (fir, birch, oak, and white cedar with some grass lands), inhabited by caribou (Roberts 1985:23; Moss 1994:140). The presence of caribou may have been the impetus for human colonization of the area (Storck 2004). Between 8800 and 8300 B.C., the regional climate slowly warmed to near modern levels, which lead to a shift from spruce forests to pine forests (poplar, birch, white cedar, black spruce, and oak) (Roberts 1985:24; Williamson 1994:34). By ca. 7000 B.C., white pine dominated around the lake, but, as the climate continued to warm, Carolinian deciduous forests (birch, hornbeam, ash, elm, oak, maple, beech, hemlock, and pine) began to colonize the area. These forests offered a relatively stable deer habitat but the actual tree species available shifted slightly with time. Hemlock, for example, was initially a dominant species; as it declined, likely due to disease, maple and beech came to dominate. It is worth remembering that much of this forest was at the bottom of what is now Lake Ontario, as the lake was at a low stand during most of this period (Roberts 1985:34,107,129; Swayze 1987:98; Moss 1994:140; Williamson 1994:34). By approximately 2400 B.C., the climate had cooled to nearly modern levels, allowing for the return of substantial amounts of pine and hardwoods to the region. The date of climatic stabilization also corresponds well with the period of lake level stabilization so that the Lake Ontario shore took on much of its modern character at this time.

At the time of European settlement, the lake margin was generally dominated by hardwoods interspersed with southerly species and substantial stands of pines occurring on the Niagara Peninsula and on sandy soils such as the Oakridge Moraines (Moss 1994:142-143; Wood 2000:xviii). By the early 19th century, accurate descriptions of tree species become available, replacing the pollen reconstructions used to interpret much of the archaeological record. The most notable of the historic tree censuses, is the work conducted by Robert Gourlay for his *Statistical Account of Upper Canada*, published in 1822. Gourlay lists chestnut, black walnut, and sassafras as primary species along the south shore of the lake, and beech, maple, birch, elm, bass, ash, oak, pine, hickory, butternut, balsam, hazel, hemlock, cherry, cedar, cypress, fir, poplar, sycamore, willow, and spruce in the Canadian domain. The disparity between these two lists is no doubt a result of the focus of Gourlay’s work on Canada, with many of these species occurring on both sides of the border (Moss 1994:144). Specific to the region surveyed archaeologically for this project, the eastern shore of Lake Ontario was dominated by oak and northern hardwoods (beech, sugar maple, basswood, white ash, and maple), with copses of pine on well-drained sandy soils (De Laubenfels 1966:95-96). Beginning in the early 19th century, much of these indigenous forests were removed in preparation for agriculture, dominated initially by grain production, and today by a mixture of grain, dairy, and specialized crops such as fruits (G/FLRPB 1972). This transition in flora has led to widespread and generally unintended results on the local environment. For example, the loss of sponge-like woodlands lowered underground aquifers, and loss of tree cover increased the water temperature of formerly shaded streams, which in turn led to a decrease in salmon spawning success perhaps as early as the 1830s (Crowder et al. 1996:129; Wood 2000:16).

CHAPTER V

EARLY HISTORY OF LAKE ONTARIO: NATIVE AMERICAN[1] AND FRENCH DOMINION

> The story of the past is not about a "series of completely different periods changing abruptly…at some sharply defined date…Each age lives on into the next …because there are innumerable human lives spanning every gap." (White and Montgomery 1994:14, quoting George Orwell, "The Rediscovery of Europe").

The North American interior east of the Rocky Mountains has three main outlets: the Mississippi River, the Hudson River, and the St. Lawrence River. These rivers form natural transportation routes allowing all of the states and provinces that border the Great Lakes to export their produce. Of these routes, the St. Lawrence-Great Lakes complex historically formed the most obvious east-west highway on the continent, and it was early recognized that those who controlled this route could move west farther and faster than their competitors. However, in order to take advantage of this natural thoroughfare and to drain the raw materials from the surrounding lands, it was necessary to construct vessels suitable for the lakes and to control important geographic nodes. To this end, the Iroquois, Huron, Ojibwa, French, British, Canadians, and Americans have variously inhabited the shores of Lake Ontario and built vessels specifically adapted to the rigors and requirements of Great Lakes travel. Lake Ontario, as the easternmost lake, figures prominently in the early European history of the Great Lakes and was the toehold from which European nations launched their westward expansion. This chapter summarizes the initial, and more dispersed, settlement of the Lake Ontario shore, spanning the pre-contact period through the end of the American Revolution. The discussion is broken

[1] The term "Native American" is employed throughout the text to describe all indigenous people, including First Nations, throughout the Great Lakes region, both prior and subsequent to European contact.

into subsections along traditional cultural divides, but, as the opening quote suggests, this period is defined far more by subtle and overlapping transitions than abrupt cultural replacements. Moreover, the role of the St. Lawrence River and Lake Ontario as occasional barriers but more often natural communication routes is fully recognized. The history of the entire shore is consequently discussed chronologically rather than geographically, generally ignoring modern political divisions whenever practicable.

Native American

Pioneering surveys of Lake Ontario's pre-contact settlement patterns and subsistence strategies by James Swayze (1987) and Arthur Roberts (1985) have done much to address general patterns of Native American adaptation to the littoral. For example, there is a general decline in the number of recorded sites moving from west to east along the north shore of the lake, likely associated with the predominance of favorable climatic and vegetation zones in southwestern Ontario (Roberts 1985:74, 121). Within this larger trend, most Native American settlements are found on well-drained soils oriented towards streams or Lake Ontario (Roberts 1985:75-76; Swayze 1987:94). Yet there are difficulties with these large generalizations. Swayze (1987:94) noted, for instance, that the density of small streams in the vicinity of archaeological sites increases from the Paleoindian to Middle Woodland Period, but leaves this fact uninterpreted. While it is possible that early Native Americans were less inclined to settle near small streams, it is more likely that substantial shifts in the local environment have rearranged and erased the traces of small streams, thereby altering our perception of mental templates employed by Native Americans in selecting a habitation site (for example the Lynde Creek area discussed by Williamson 1994:42). Due to these environmental shifts, and related, as well as independent, cultural transformations, it is important to consider each culture period individually and within the larger historic context. Thus, each culture is discussed in reference to what preceded it, as well as to how that culture interacted with the shore environment.

Paleoindian

The first recorded humans entered the Lake Ontario region ca. 9000 B.C, at roughly the same time that the environment was transitioning from spruce to pine forests, likely in pursuit of caribou moving north with the ameliorating climate (Roberts 1985:26; Williamson 1994:7; Carruthers and Williamson 2004:14; Storck 2004:6). These Paleoindian peoples appear to have been mobile foragers who based much of their movement and settlement on the seasonal migrations of caribou, but who also took smaller game and plant resources wherever available. Due to their transitory settlement pattern, low population densities, and the intervening millennia, relatively few Paleoindian sites have been identified in northern New York, and sites of this period are less well represented than other periods in Ontario (Ewing et al. 1995:24).

Despite the relative paucity of data, Paleoindians in the Lake Ontario region appear to have been similar to early peoples in other regions in that they preferentially settled along lake margins. Unfortunately, the majority of these former shores are now either far removed from Lake Ontario or submerged under its waters (Roberts 1985:82; Goldberg and Macphail 2006:116). A submerged pre-contact site has not yet been excavated in Lake Ontario, although stone tools accumulating on Selkirk Beach in Mexico Bay (New York State Office of Parks, Recreation and Historic Preservation [NYSOPRHP] site number 07516.000079) may be originating from an unidentified offshore site. Yet it is very likely that Paleoindians would have camped overlooking low-stand versions of Lake Ontario while waiting for caribou to approach the water, and these formerly raised beaches are now nearly 60 m below the surface of the lake. With the lake level below modern levels for nearly all of the Paleoindian Period it is very likely that a sizeable portion of the Paleoindian archaeological record is now inundated and has not yet been investigated.

At the other extreme are Paleoindian sites situated along shorelines that are now several kilometers from the lake. For example, Laurie Rush and Susan Winchell-Sweeney (2008) have identified possible Paleoindian boat-building sites along the Lake Iroquois shoreline within Ft. Drum, NY. These sites suggest that Paleoindians had a maritime adaptation and likely used Lake Iroquois for transportation and resource procurement. It is very possible that these early lake-men continued to build their boats along the retreating littoral, constantly adapting the lower water levels and eventually passing the technology onto subsequent Archaic Period cultures.

Early Archaic

By ca. 7000 B.C the climate around Lake Ontario was becoming noticeably warmer allowing deciduous trees to expand into the region. This ecozone was rich with deer, acorns, hazel nuts, and berries, not formerly available in the region. Early Archaic peoples also arrived at this time. Distinguished from the Paleoindians by their projectile points and lithic technology, it is unknown whether the Early Archaic people moved north as the climate warmed, developed in situ from the Paleoindian culture, adapting as the climate slowly changed, or some combination of these two scenarios (Roberts 1985:3,39,82,129; White and Montgomery 1994:25). Sadly, analysis of the Early Archaic is hampered by a general lack of identified sites from this period (the same is also true of the Middle Archaic). This situation is likely related to the low population and dispersed settlement of Early Archaic peoples, as well as difficulties in identifying sites with no diagnostic artifacts, but may also be related to rising lake levels. Early Archaic peoples are known to have relied on fish and other aquatic resources and often centered their settlements near streams and lakes. These aquatic and marshland environments may have been the most productive and dependable in the otherwise immature and resource-poor northern forest (Swayze 1987:100; Williamson 1994:8,42; Ewing et al. 1995:24). It is uncertain whether these people utilized Lake Ontario itself, as many of the recorded sites are situated away from the lakeshore, but it should also be remembered that the lake was substantially lower than modern levels during this time (Roberts 1985:90; Williamson 1994:42). Like Paleoindian sites, many Early Archaic sites may be submerged beneath the lake.

Middle Archaic

There is some indication that populations were on the increase during the late Early Archaic Period as people settled into their increasingly stable environment, and this pattern continued into the first portion of the Middle Archaic Period. There are still relatively few known sites from this period, but Native Americans were likely using the uplands as seasonal hunting and collecting areas with associated camps and the neighborhood of the lake for their main base camps, leaving only their more ephemeral sites exposed above the modern lake (Roberts 1985:129; Williamson 1994:44). There is no direct evidence for navigation on Lake Ontario during this period, although fishing weights and other maritime artifacts have been found. However, the earliest recorded North American dugout dates to this period (6050 +/- 50 radiocarbon years B.P. from Florida) and it is possible that similar boats were used on Lake Ontario (Hartmann 1996:60).

The end of the period, conversely, was a time of substantial turmoil in the region. Ca. 2700 B.C, the hemlock forests of the region declined precipitously, likely as a result of a forest pathogen. This decline may have been catastrophic for the deer population, depriving them of one of their primary sources of shelter and sustenance during the winter months. The decline in deer populations, in turn, would have put stress on human subsistence patterns (Swayze 1987:98). At nearly the same time as they were losing their primary terrestrial source of protein, Middle Archaic people were faced with rapidly rising water levels in Lake Ontario. The Nipissing Flood had begun and the lake level was rising an average of 6 cm per year and pressing the shoreline landward by the meter. These changes would have been noticeable to individuals and were likely preserved and possibly exaggerated in the cultural memory, with landmarks clearly visible to grandparents known to their grandchildren only in stories (Welinder 1997:91; Westley and Dix 2006:14). The psychological consequences of this rise was likely immense as not only camps and villages were driven back by rising water but the drainage pattern of surrounding wetlands and streams shifted with the rising lake level making lowlands unstable habitats and leading to an intensification of upland settlement (Lovis et al.

2005). Formerly productive marshes were drowned and the very nature of the lake likely changed as the increased current carried a heavier sediment load and changed fish habitats throughout the lake basin. The loss of wetlands may have been particularly pronounced in the northeast portion of the basin where the several small depressions that form the lake bottom were likely filled with small lakes and wetlands connected by streams. It is unknown exactly how Middle Archaic people adapted to the rising lake levels; they may have found new resources along the altered lake and stream littorals, or focused nearly all of their energies on upland resources, resources that were also familiar to them, despite the decline in deer populations. Even more difficult to ascertain is the cultural and social repercussions of these events; the Middle Archaic Ontarians left no record of how they perceived these changes, although similar water rises may have spawned beliefs of divine retribution in other cultures (Ryan et al. 1997; Asku 2002).

Late Archaic

This period of disruption spans the generally accepted beginning of the Late Archaic Period (2500 BC) and links the two periods. However, whereas the Middle Archaic Period was dominated by a stable environment, only to end in change, the Late Archaic Period ended with a relatively secure and currently recognizable climate and lake level. Ultimately, the hemlock forests were replaced by maple and beech groves that provide for superior deer browsing, and the newly formed marsh environments matured leading to expanding human populations with broad and adaptable subsistence patterns and increasingly sedentary societies that laid the ground work for the Woodland Periods (Roberts 1985:130; Swayze 1987:98; Williamson 1994:8).

During the Late Archaic, territories became more established with groups participating in a seasonal subsistence pattern within a specified area. This pattern consisted of spring and summer macro-band settlements, generally larger than any previous settlements in the area, and autumn and winter micro-band settlements. The macro-band settlements tended to be near lakeshores and river mouths to exploit aquatic resources but were probably surrounded by temporary satellite camps to collect other foods and resources. During the winter months, these groups split into smaller units to pursue deer and harvest nuts, among other resources (Roberts 1985:44; Swayze 1987:98; Williamson 1994:43; Carruthers and Williamson 2004:15). Deer and acorns dominated much of the resulting diet, but fish became increasingly important during this period and visible in the archaeological record. The Schmidt Site produced bones from several species of fish including sturgeon, drum, walleye, large-mouth bass, bowfin, channel catfish, catfish, longnose gar, yellow perch, and yellow bullhead. Similarly, the Lamoka Site, which was likely a macro-band base camp, was dominated by deer remains (nearly 83% of the recovered faunal sample) but also included turtles, bullhead, perch, sunfish, pike, and sucker. It is likely that the fish faunal collection under represents the amount of fish eaten at the site, as William Ritchie's 1969 report described "clouds" of fish scales blown away by the wind during excavation. The Lamoka site also produced fishhooks, gorges, and net sinkers to attest to the presence of aquatic resources in the Late Archaic diet (Roberts 1985:44-46).

Early Woodland

Early Woodland Period settlement and subsistence patterns were nearly identical to the preceding Late Archaic Period and the culture was not fundamentally different except for the introduction of pottery between 2,500 and 3,000 years ago. This introduction is a useful temporal marker for archaeologists but does not seem to have had a great influence on the daily lives of Native Americans in the region (White and Montgomery 1994:26; Williamson 1994:8; Ewing et al. 1995:25; Carruthers and Williamson 2004:16). Arriving with this pottery, either through migrations or the transmission of ideas, were increased trade and ceremonial networks. Goods and materials begin to move through the entirety of the Eastern Woodlands during this period with the shores and rivers of the Lake Ontario Basin likely serving as one of the routes of this trade. Tied to the movement of goods was an increase in ceremonial complexity drawing on the Adena Culture of the Ohio Valley and most noticeable in the introduction of burial mounds and the proliferation of smoking pipes (Williamson 1994:8; Ewing et al. 1995:25; HAA 2001:10).

Middle Woodland

Processes begun in the Early Woodland Period continued into the Middle Woodland Period, which began ca. A.D. 300. The population in the region continued to expand and the influx of ceremonial influences from the Ohio Valley went on unabated. Populations continued to be mobile, moving at least seasonally, and deer, supplemented by nuts and a wide variety of secondary faunal sources made up the diet (Williamson 1994:8). A substantial number of sites have been recorded from this period on land masses either entirely or mostly surrounded by water. For example, Prince Edward County, Ontario, was densely settled during this period, particularly in the Bay of Quinte region (Esler 1993:12; Swayze 1997:5). The Thousand Islands also contain many sites from this period (e.g. BbGa-8, BbGa-9, BbGa-10, BbGa-11, BbGa-12, and BbGa-13).

This period also witnessed the division of the region into archaeologically identifiable groups, primarily recognized through differences in ceramic vessel shape and decoration. Extending from northern New York to southeast Ontario, the Point Peninsula culture was the prevalent group in the vicinity of the archaeological surveys conducted for this research. These people seem to have relied heavily on aquatic resources, with many of their habitation sites situated on promontories, coves, and islands directly associated with lakes and streams. While it is likely that they also maintained winter camps in the uplands, their littoral camps contained a paucity of terrestrial animal bones and only light deposits of flora remains (primarily hickory and butternut shells and chenopodium seeds). Conversely, fish were well represented and their fishing tool kit was extensive and complex. Not only did they use barbed (composite) and unbarbed fishhooks, harpoons, and arrows to take fish, they employed gorges to lay trot-lines and take fish such as bullheads, catfish, and eels. Additionally, at least two distinct types of net sinkers have been found in large numbers (Ritchie 1965:206-207,210,245). The Point Peninsula people were not unique in their subsistence strategy and the species they were taking would have been familiar to Late Archaic residents of the area two millennia earlier. There is a good deal of evidence for a continuous and gradually more sophisticated maritime adaptation on Lake Ontario.

Late Woodland

The Late Woodland Period, here subsuming various other chronological divisions such as the Terminal and Transitional Woodland periods, is the best understood and most complex Native American period in the Lake Ontario region generally, and the northeast shore of the lake specifically. Beginning ca. A.D. 600 and continuing through European contact, this is the period when agriculture, archery, and the Iroquois come to dominate the region. The introduction of the tropical cultigens maize, beans, and squash, is the technological marker of this period. However, these plants remained a dietary supplement until ca. A.D. 1300. During the intervening 700 years, horticulture developed to agriculture and people became more sedentary, although a seasonal round of base camps increasingly oriented around fields and hinterland camps for hunting and foraging remained a cultural fixture. Simultaneously, ceremonial practices and social structures became increasingly complex, with groups beginning to formalize their relationships. When agriculture was eventually established as the basis of subsistence, residents of the region were well prepared for a nearly sedentary existence with well-developed political systems and allegiances structuring both intra- and inter-group experiences. It is in this context that the culture recognized as the Iroquois (Figure 5.1) (not only the Five Nations of the Cayuga, Mohawk, Oneida, Onondaga, and Seneca, but also the Huron-Wendat, Petun, Neutral, and St. Lawrence), and their linguistically distinct neighbors the Algonquins, developed (Rayback 1966:114; Williamson 1994:9; Ewing et al. 1995:25; Carruthers and Williamson 2004:18). As a result of expanding populations, the need for territorial control brought on by agriculture, and political intensification, this period witnessed more warfare than any previous time. The arrival of the French near the end of the period also provides at first intermittent and then

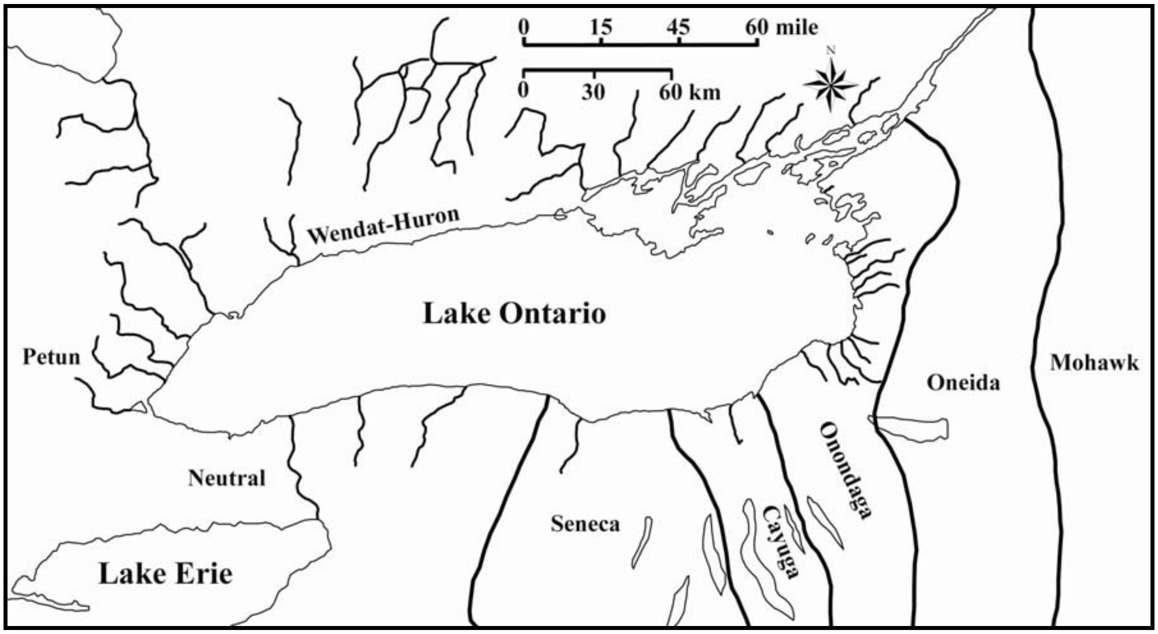

FIGURE 5.1. Distribution of Native American groups at ca. A.D. 1600.

continuous written records of the population movements and cultural shifts associated with this competition.

Along the northeast shore of Lake Ontario, the Point Peninsula culture transitioned into the Owasco culture, which was centralized in central and eastern New York. During the Owasco period, hunting and gathering remained important, but use of aquatic resources appears to have declined as horticulture and archery fulfilled more of people's dietary needs. While settlements continued to be situated along river rifts and near wetlands or lake shallows, there was an increasing number of settlements on the second terraces of rivers, possibly balancing aquatic and horticultural subsistence strategies. The number of fishing implements begins to decline during this period. Net sinkers remain constant, suggesting that seining was still important, but gorges disappear entirely. A partial explanation for the decline in fishing implements is a change in technology as evidenced by a trot-line from the Castle Creek Site that utilized hooks made of hawthorn spines rather than bone gorges. However, the archaeological evidence strongly suggests that fish were less important during this period than previously.

Fortified towns also begin to appear during this period, evidence of the increasing competition for land and resources that would come to dominate the region (Ritchie 1965:253,273-276; Ewing et al. 1995:25; Hasenstab 2007:168). Closely related to, yet distinct from, the Owasco people, the Pickering people also inhabited the eastern shore of Lake Ontario but tended to be centered to the north in southeastern Ontario and northern New York. The Pickering culture paralleled the Owasco culture, and some sites, such as the Pillar Point Complex in northern New York, contain a mixture of their traits (Ritchie 1965:253,273; White and Montgomery 1994:26; Abel 2001:169). The Pickering culture eventually moved to lands between Georgian Bay and Lake Ontario, becoming the Ontario Iroquois, while the Owasco remained in the eastern Lake Ontario region and gradually transitioned into the St. Lawrence Iroquoians by A.D. 1350 (White and Montgomery 1994:27; Ewing et al. 1995:25-26; Abel 2001:168).

The St. Lawrence Iroquoian was a sedentary and agriculturally-oriented group centered between Sandy Creek and the Black River in New York. Their settlements near Lake Ontario tended to cluster on the New York side of the border but also stretched up the St. Lawrence River, occupying both banks from Brockville to Quebec (Ewing et al. 1995:25-26; Tremblay 2006:36,113). Similar to other Iroquois, the St. Lawrence Iroquoians lived in palisaded villages adjacent to their agricultural fields, often on well-drained river terraces or hills overlooking small streams, and surrounded by smaller specialty sites. Likely due to depletion of wood resources and the accumulation of garbage and pests, the populations shifted village location approximately every 20 years, possibly inhabiting both new and old villages for a time to ensure stable food production and a smooth transition (Abel 2001:110-113; Jones 2006:525-526). In addition to maize, beans, and squash, the St. Lawrence Iroquoian relied heavily on fish, as well as deer, and maintained fishing stations along Lake Ontario (Abel 2001:111,178).

The St. Lawrence Iroquoian disappeared as an independent culture group around 1580. It is unclear why they ceased to exist, but their demise may have been related to climate change, disease, and warfare (Pendergast 1993:28; Ewing et al. 1995:26; Tremblay 2006:118,125). The beginning of the Little Ice Age in ca. A.D. 1400 likely caused a decline in agricultural production and an increase in political tension throughout the region. This downturn in the climate has been associated with the rise of the Iroquois who then likely pressed into northern New York (Adams 2003:10). While James Pendergast (1993:27-28) has argued that the Huron-Wendat, and possibly European disease traveling ahead of actual contact, were primarily responsible for the destruction of the St. Lawrence Iroquoian, the currently accepted hypothesis is that the Onondaga and Mohawk Iroquois, and by extension all of the Five Nations, forced them out of the region. It is unlikely that the St. Lawrence Iroquoians were completely wiped out, but their fate is still largely a mystery. It is possible that they were absorbed into the Onondaga, Mohawk, Huron-Wendat, and/or Abenaki populations that surrounded them (Ewing et al. 1995:26; Abel 2001:173; Tremblay 2006:124,128-130). However, the slow decline in village sizes in New York and similarities between St. Lawrence Iroquoian and Huron-Wendat ceramics from north of the St. Lawrence River suggest that the St. Lawrence Iroquoians slowly migrated north over approximately a century and were assimilated into Huron-Wendat groups in what is now Ontario (Ewing et al. 1995:26; Abel 2001:180; Adams 2003:67). Following the abandonment of the area by the St. Lawrence Iroquoians, the region was utilized by the Onondaga for hunting, trapping, and fishing, but was not extensively settled (Ewing et al. 1995:27).

Throughout the 15th and 16th centuries, the same warfare that forced the St. Lawrence Iroquoians out of their homelands led to the formation of the Iroquois Five Nations and the Huron-Wendat alliance, and eventually led to a similar pattern of dispersal throughout the Lake Ontario region. The formerly dispersed Iroquois populations began to coalesce into several large villages during the 15th century. These villages formed mutual support networks in the face of increased warfare with outside groups but maintained their autonomy and were separated from the heartland of adjacent Iroquois populations by an unsettled band of land dedicated to resource procurement (Adams 2003:3; Tremblay 2006:124). As the Five Nations solidified their control over the Mohawk River Valley and Finger Lakes regions of New York, they began to spread throughout the Lake Ontario Basin, displacing the Mohicans, Huron-Wendat, Petuns, Neutrals, and Eries between 1626 and 1653. As evidenced by the St. Lawrence Iroquoians, conflict in the region predates European contact, but the introduction of the fur trade likely exacerbated the situation and may have led to the Five Nations' push to control Lake Ontario (Rayback 1966:119; White and Montgomery 1994:29).

The need to trap and export hides, first to the Dutch and later the English, introduced a new dynamic to regional politics. No longer was it sufficient to control enough lands to support your village and ensure a suitable site for a new village every quarter century. With the expansion of commodity-driven trade, there was suddenly an incentive to control far larger tracts of land and to exclude others from participating in the trade. Similar forces had likely been at play since regional trade fluoresced during the Early Woodland Period, but the level of European demand far outstripped anything previously known in the region. Thus, the Five Nations people forced the Neutral and Petun out of the Niagara Peninsula and Hamilton, Ontario area and drove the Huron-Wendat from the north shore of Lake Ontario. As these groups retreated northward into the Lake Simcoe-Georgian Bay area, they left the north shore of the lake essentially deserted except for Iroquois camps at river mouths, controlling portages into the interior. This situation persisted until Ojibwa Algonquian tribes, including the Mississauga and Chippewa, drove the majority of the Iroquois out of what is today Ontario between 1680 and 1700 (Coombs 1930:17; Lennox 1976:12-13; Wakefield 1976:188; Turner 1994:183; White and Montgomery 1994:29-30; Adams 2003:3; Carruthers and Williamson 2004:18).

The prolonged warfare and escalating violence of the 15th through 17th centuries had significant consequences for the communities of the Lake Ontario region, which manifested itself in their villages. Not only did villages tended to become larger and more defensible during this period, but they also drew farther away from major waterways (Charlton 1882; Pendergast 1966; Rayback 1966:115; HAA 2001:11; Jones 2006:525-526). While villages remained associated with wetlands and small creeks in order to obtain water, they moved away from the lakeshore and major river routes, systematically avoiding canoe-accessible water and any navigation nodes such as portage points or waterfalls. Robert Hasenstab (2007:170) has hypothesized that this movement was defensive and a primary driver for the Iroquoian shift into the uplands of the region. While the Iroquois, as well as the Huron, found it prudent to limit their exposure to water routes and became remarkably adept at selecting village sites that were conducive to growing maize, beans, and squash, they did not entirely turn their backs on the several millennia of maritime adaptations that had provided for their ancestors (Reed 1990:154; Jones 2006:526,534). For example, in Prince Edwards County, Ontario, specialized foragers supplied Iroquois agricultural communities with fish and game (Esler 1993:3-4,52). Similarly, the Upper Gap Site, situated on the mainland shore of Lake Ontario commanding the entrance to the Bay of Quinte and the passage between Amherst Island and Prince Edward County (Upper Gap), was probably a resource procurement site. Consisting of five lightly-built longhouses and evidence for multiple occupations between A.D. 700 and A.D. 1300, this site may have been a camp associated with procuring aquatic resources. It may have also been a rendezvous site, as its position at the intersection of inland, shore, and deep-water routes made it an optimal location to participate in the exchange of goods and ideas. It was a good place to maintain relations with groups living all along the Lake Ontario littoral and may have served as an information post for a larger inland community (Murphy and Kake 2006).

Contact Period

Into this tense political environment stepped the French during the mid and late 17th century. When they arrived on the lake they found the shores largely abandoned with large Iroquois villages in the uplands south of the lake and temporary camps near many of the major river mouths. Along the south shore, there were rendezvous points and transportation centers, temporary but regularly inhabited camps, at Oswego, the mouth of the Salmon River, on the eastern shore of the Niagara River, and possibly at the mouth of the Genesee River (O'Callaghan 1858:308; Zercher 1935:8,10; Pound 1945:258; Pritchard 1973:xv; Scott and Scott 1986). While the Iroquois (primarily the Seneca) utilized the north shore more for trapping, fishing, and hunting than agriculture, they did establish semi-permanent camps or villages at major portage routes in order to control access to the hinterlands and the fur-bearing animals that lived there. These villages were located near Trenton (Kenté), at Port Hope on Weller Bay (Ganaraské), at the mouth of the Rouge River near Pickering (Ganatsekwyagon), at the mouth of the Humber River near Toronto (Teiaiagon), near Hamilton (Quinaouatoua), on the north shore of Rice Lake (Kentsio), at Oshawa (Scugog), and at Nappanee on Hay Bay (Ganneious) (Richardson 1944:4; Pritchard 1973:41,69; OCMA 1985a; White and Montgomery 1994:12-13,20).

These villages were connected with each other and with settlements throughout the lake basin through both canoe routes and paths along the shore (Richardson 1944:25), and from these villages they were able to control trade throughout the region. The majority of the portage points along the north shore were positioned to allow access to north-south oriented rivers that carried travelers to the Oakridge Moraine, where a second portage admitted them to a more open system of lakes and rivers and permitted widespread use of the hinterland. Some of these routes connected disparate locations. For instance, it was not uncommon for Native Americans to travel down the Ottawa and St. Lawrence Rivers and around the margin of Lake Ontario before crossing Lake Nipissing or Lake Simcoe and descending French River to Georgian Bay on Lake Huron (White and Montgomery 1994:12-13).

By drawing on their alliances with the Iroquois and the well-established Iroquois trade system, the Dutch, and later the English, were able to redirect much of the Great Lakes' furs away from Montreal and towards Albany during the early 17th century. This trade provided a significant economic benefit to the Dutch and English and drew the Iroquois into conflicts that were developing in Europe (Pound 1945:48-49; White and Montgomery 1994:30). The value of this integrated riverine and lacustrine transportation network was not lost on the French and they placed Sulpician missionaries at Kenté (Port Hope) with satellite missions in other villages such as Ganatsekwyagon, and trading sites at Oshawa (Scugog), Toronto (Ganatsekwyagon and Teiaiagon), Oswego, and the Salmon River. They also established Fort Niagara and Kingston (Cataraqui) to monitor and intercept Native American trade routes. Thus, there is a direct relationship between the settlement patterns of the Iroquois and the early French, building on millennia of transportation practices in the Lake Ontario Basin (O'Callaghan 1858:308; Pritchard 1973:xiv; OCMA 1985a; Scott and Scott 1986:1; Stewart et al. 1988a:27; Turner 1994:183; White and Montgomery 1994:30; Carruthers and Williamson 2004:19).

For a time, however, the Iroquois numbers (approximately 850 warriors as late as 1736), knowledge of the region, and control of local maritime and terrestrial communication allowed them to trade as they pleased (O'Callaghan 1855b:1052-1058). Fear of this Iroquois domain led to the European discovery of Georgian Bay before Lake Ontario and excluded the French and Huron-Wendat from the fastest route between their settlements on that bay and Montreal (Charlton 1882; Wakefield 1976:189). Eventually, the Huron-Wendat were no longer viable trading partners and the French turned to the Ojibwa for furs. The Ojibwa in turn began to press into southern Ontario during the 1680s and 1690s, taking the region from the Iroquois. According to Native American oral tradition this conquest was achieved with minimal French assistance, but the presence of an expanded fur market no doubt influenced the territorial expansion (White and Montgomery 1994:32).

The Mississauga nation of the Ojibwa replaced the Iroquois along the north shore of Lake Ontario and dealt primarily with the French, leaving the Iroquois the south shore and ready contact with the British. The Mississauga tended to be more transitory than the Iroquois, preferring a hunting and foraging lifestyle to agriculture. As a result, they likely re-inhabited Iroquois village sites but used the surrounding lands differently and maintained a smaller population in the region, with perhaps 2,500 Ojibwa inhabiting an area that had supported nearly 5,000 Iroquois (White and Montgomery 1994:32). The Mississauga continued to inhabit the north shore into the early 19th century, slowly moving west as Europeans encroached on the eastern portion of the lake. While the Treaty of Paris (1763) had left the Canadian shores of Lake Ontario and much of central Canada as a reserve for Native Americans, the American Revolution encouraged widespread European American settlement of the area (discussed further in the next chapter). Despite this pressure, the Mississauga maintained villages at Port Credit and on Toronto Island as well as control over the lands between Etobicoke Creek and Burlington Bay for several years after the war. By 1798, however, the British had built a government house in their Port Credit village and made major land purchases from them in 1805 (Skelton 1921:9; White and Montgomery 1994:32,37).

A similar pattern took place on the United States side of the lake. Following the American Revolution, the Oneida, who had sided with the Rebels, were permitted to stay but sold off a large section of their land to the United States government in 1784 and much of the remaining property to the State of New York in 1788. In the same year, the Onondaga also ceded control of much of their territory to New York. Many of the Iroquois emigrated to the Grand River Valley, north of Lake Erie, temporarily removed from heavy European influence, with some Mohawk also settling in the Bay of Quinte region (Ten Cate 1982:30; Pratt 1990:2; Ewing et al. 1995:27). Despite the movement of much of their population, as well as the economic base of fur trading, far to the west, many Native Americans remained in the area and continued to engage in long-established occupations, such as raising ginseng and rice. They also assisted the British in returning deserters from posts in Upper Canada, taking advantage of their ability to move freely across the border (Frederic 1799 [1987]:94-95; Gibson 1999:76). Native Americans continued to be a presence in the region and are noted in many 19th-century accounts; however, their declining numbers (as low as 40 along all of the north shore in 1881) and the drastically increasing presence of Europeans, Canadians, and Americans quickly overshadowed them in the archaeological record (Murray 1969 [1856]:103; Myers 1989 [1843]:101; White and Montgomery 1994:46; Wood 2000:49; Holtham 2000 [1831]:106; Bruce Horne 2008 pers. comm.; John O'Shea 2008 pers. comm.).

Lake Ontario in Native American Subsistence and Religion

As has been alluded to several times already, aquatic resources were consistently important to Native American subsistence in the Lake Ontario region. Native Americans likely took walleye during their spring up-stream spawning run and Atlantic salmon and brook trout in similar locations during the fall. Whitefish and lake trout would have also been particularly plentiful in the fall when they spawned near shore. Other species, such as drum, brown bullhead, pumpkinseed, rock bass, largemouth bass, shad, and bowfin, would have been accessible from near shore for much of the year and could have been taken from the substantial (4-9 m long) bark canoes that were prevalent in the area by the 17th century (Ten Cate 1982:3; Williamson 1994:35; Barry 1996:11-12). The lake and its wetlands also attracted seasonal and perennial waterfowl as well as mammal prey, making it an attractive resource for much of the surrounding area. For example, the Late Woodland Period MacLeod Site (AlGr-1), situated 6.6 km north of Lake Ontario, contained remains of both terrestrial and wetland mammals, water and land adapted fowl, and both stream and lake fish species (Reed 1990:161; Williamson 1994:36). Important, but less archaeologically visible, wetlands also produced edible plants (e.g. wild rice, cattails, water lilies, bulrushes, arrowhead, and chuffa), as well as materials to make baskets, nets, and other textiles (Swayze 1987:97). Clearly, the lakes and rivers of the Lake Ontario basin were a boon to the native population, but the lake was also the source of storms and loss of life through capsized canoes, thin ice, or other accidental drowning. The Native American relationship with Lake Ontario was likely at least as complicated as the feelings of modern mariners.

We do not know how these complex relationships manifested themselves for early indigenous peoples, but historic period Great Lakes Native Americans have left a rich record of their beliefs. In the Lake Superior region, reality was believed to be made up of three superimposed domains, with human life taking place on an island, the middle domain, floating in the opposing domains of sky and water. Associated with the sky and water domains, but able to move freely between them, were spirits known as *manitous*. The water *manitous* were generally considered to be dangerous, and by extension lakes and islands were regarded with caution. In the Lake Superior region, the principal water *manitous* were Mishi Bizi, the chief of the underwater *manitous*, often depicted as a white panther that lived underwater, and Mishi Ginabig, the strongest of the underwater *manitous*. Mishi Ginabig was a giant, often horned, serpent who was responsible for all drownings but could also grant good fishing (Martin 1999:199-202). The horned serpent also appeared as an evil force in Oneida Iroquois folklore, where it was directly associated with water (Wonderley 2004:112-133). Throughout the region, the enemies of the water spirits came from the sky. In the Lake Superior region, the sky *manitous* were the protectors of humans and were generally victorious over the water *manitous*, as when winds drove off a lake fog that had made travel dangerous. For the Oneida, the sky spirits were personified by Thunders, generally associated with rain and storms. Similar to the sky *manitous*, Thunders generally bested the horned serpents to the benefit of humans. In one instance, rain generated by Thunders kept the serpents under the surface of the Great Lakes and prevented them from invading the world of man (Martin 1999:200; Wonderley 2004:114,133). It is interesting that the Oneida did not share the European fear of storms. They perceived the Lakes themselves as threats, while European Americans tended to only fear the lake when an outside force, such as a storm, was present. It is possible that this distinction had to do with the types of travel on the lakes. Native Americans tended to engage in coastwise travel around the Great Lakes, where storms were less of a threat than an unexpected tree branch or rock just below the surface that could upset a canoe, while European Americans often traveled in larger ships across the open lake and were more susceptible to sudden changes in the weather.

Both groups also had the weight of many generations of cultural beliefs that influenced their views of the Great Lakes and water in general. Both groups, however, also tried to gain control over the aspects of the Lakes that frightened them. For their part, Native Americans attempted to propitiate the water spirits with sacrifices of tobacco, white animals, and red cloth. These sacrifices could be made to any body of water, but waters that were transforming, freezing or thawing, and places, such as rock faces descending into the water, where the earth, sky, and water domains intersected were believed to be particularly good for sacrifices. Landmarks also dictated where a sacrifice should be made, so that quartz veins, believed to be mythic snakes, near to water were often sought. If no natural landmark was available, one was occasionally made. For example, a latticework icon inscribed on rock could serve as a spiritual bridge between domains and an attempt to gain knowledge from the *manitous* (Martin 1999:206). Finally, Native Americans were not alone in seeing giant snakes in the Great Lakes. An 1821 article in the *Oswego Palladium* reported a water snake more than 10.7 m long and 0.8 m in diameter (Keefer 1821).

The French on Lake Ontario

Beginning in 1610, Samuel de Champlain, Governor of New France, encouraged French youths to live among the Huron-Wendat in order to learn their language and customs and to aid in funneling furs towards Quebec. Étienne Brûlé was one of these youths and, acting as a vanguard for Champlain, was the first European to reach the Great Lakes. Brûlé's "discovery" occurred within a decade of the English settlement of Jamestown, Champlain's entrance into Lake Champlain, and Henry Hudson's claiming of New Netherland (Pound 1945:17,42,44; Inland 1984:295; Barry 1996:11).

The Incremental French Dominance of Lake Ontario

The next several decades consisted of intertwined efforts by the French to gain access to the Great Lakes through exploration, trade, warfare, and religious missions. Although Champlain depicted Lake Ontario on his 1613 map, he did little more than sketch its outline and note that it took 15 days to cross by canoe. The first map of the lake based on actual observation was Champlain's map of 1616, which names the lake Lac St. Louis. The process of exploration continued, with the shapes and extents of the Great Lakes becoming increasingly well known with each foray into the territory. However, even Champlain's 1632 map of the Great Lakes is full of inaccuracies, and Lake Erie is little more than a bulge in the Niagara River. Maps continued to be made throughout the French period, with the lake taking its modern name for the first time on Nicolas Sandon d'Abbeville's 1656 map of "Le Canada ou Nouvelle France" (Mika and Mika 1985:248,251).

While many of the French expeditions into the Great Lakes region were to gather information and recruit Huron-Wendat trappers, they also launched attacks against the

Iroquois. Champlain clearly recognized the threat that the Iroquois posed to French control of the interior and he organized multiple raids on their villages. One of his unsuccessful attacks on a palisaded village near Oswego indirectly resulted in the 1649 Iroquois reprisal that nearly wiped out the Huron-Wendat and effectively removed them from Lake Ontario (Charlton 1882). Due in part to this inability to conquer or control the Iroquois, official French documents indicate an uncertainty about the resources and routes of Lake Ontario as late as 1665 (O'Callaghan 1855b:30). However, two years later the French sued the Iroquois for peace, which lasted until 1688 and provided them with an opportunity to establish themselves in the lake region. The French quickly sent priests into the region, establishing a mission at Kenté on the Bay of Quinte (Wellers Bay) in 1668, and began to build frontier posts (Charlton 1882; Pound 1945:9; Burleigh 1973:5).

Despite this push into the region, the French discouraged settlement around Lake Ontario except in the immediate vicinity of fortified trading posts. The Great Lakes interior was viewed as a fur reserve and it was feared that settlement would drive off the animals and create competition for furs from private traders. During the second half of the 17th century, the French instead employed the same expansion pattern they had used along the St. Lawrence River. After insinuating isolated traders and missionaries into Native communities and assessing the potential of the region, they quickly built small fortified settlements in the vicinity of friendly Native Americans. On Lake Ontario these fortifications included Niagara, Frontenac, Fort des Sables at La Famine (Irondequoit), and Oswego (Figure 5.2), all built between 1673 and 1727 (O'Callaghan 1855c:827; Brown 1985:370-371,382-383; Mika and Mika 1985:252). The first of these, and most important to the northeast portion of the lake, was Fort Frontenac on the site of modern Kingston, Ontario.

On 12 July 1673, Count Frontenac and approximately 400 men landed in 120 canoes and 2 armed flat boats at what was then known as Cataraqui. Much of what we know about this expedition comes from an anonymous journal that is often attributed to Frontenac's secretary Jean Lachasseur (Pritchard 1973:xii). This was the first major

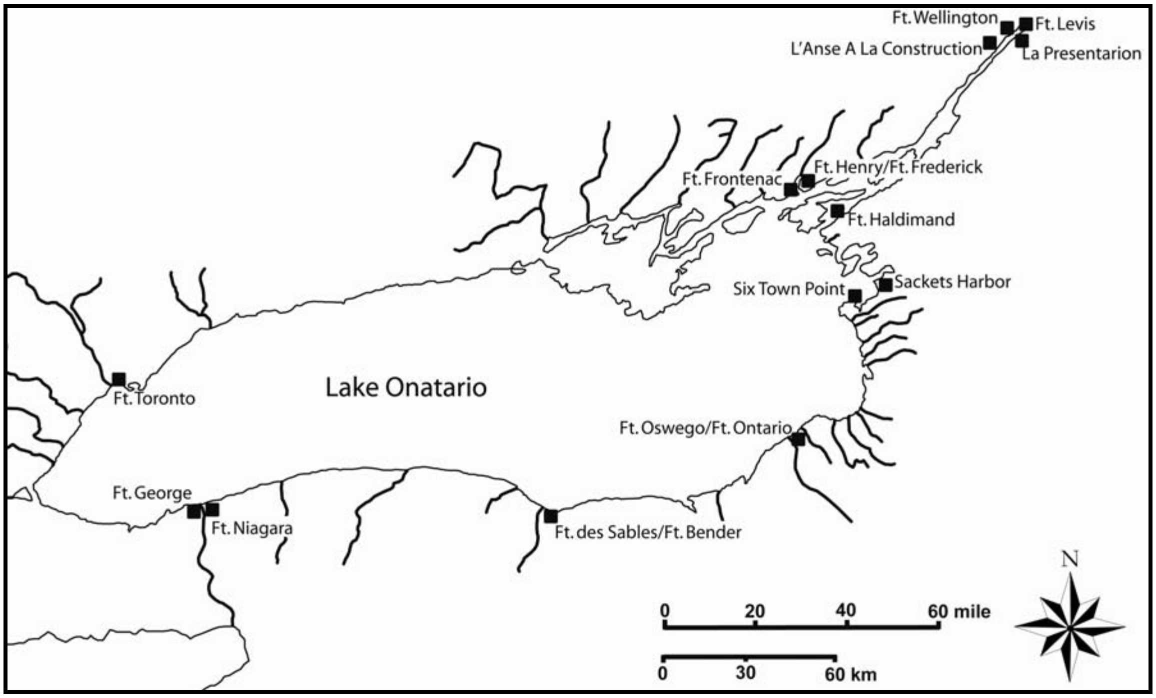

FIGURE 5.2. Lake Ontario fortifications.

French force to appear on Lake Ontario, Champlain's earlier raids being composed primarily of Huron-Wendat, and it was calculated to impress the Native population. The brightly painted flat boats were brought with much difficulty through and around the rapids of the St. Lawrence River to prove that the rough waters of the river were not an impediment to the French. This show of strength was necessary because the French were concerned that the Ottawa were negotiating with the Iroquois to route Ottawa furs through the Iroquois to Fort Albany and the English. In order to stem this flow, Count Frontenac held a meeting with Iroquois leaders to convince them of France's power and good intent at the same time that he ordered the construction of Fort Frontenac to interrupt their route around the eastern end of Lake Ontario and funnel their furs to Montreal (Pritchard 1973). The significance of this act was not lost on the Iroquois, who remained distrustful of the French toehold in their domain, and eventually drove the French from the lake in 1688 (O'Callaghan 1855c:787; Pound 1945:9; Burleigh 1973:15; Barry 1996:15).

However, the 15 years of relative peace between 1673 and 1688 were sufficient for Robert Cavelier, Sieur de La Salle to found a seigneury at Catarqui in 1675 and quickly establish a shipyard at Fort Frontenac. By 1678 his shipwright Moïse Hillaret had built four vessels, *Cataraqui* (10-20 tons) and *Frontenac* (approximately 40 tons), as well as two unnamed ships, all described as *barque pontées* or decked vessels. *Frontenac* was nearly 13.7 m long with a beam of 3.6 m and a draft of 1.8 m. It carried lug sails on two masts and became the first historic Great Lakes shipwreck when it foundered in a gale off Thirty Mile Point (U.S.) during the winter of 1678/9. These vessels were used to carry supplies across the lake and solidify French control by intercepting Native Americans attempting to trade with the English and by maintaining the threat of a swift French attack from across the lake (O'Callaghan 1855a:218; Cruikshank 1926:3; Ericson 1969a:92; van Gemert 1972:287; Cooper 1980 [1856]:35; Ellis 1984:295; Barry 1996:12; Calnan 2002:196). They also carried supplies to build their more widely known sister-ship, *Griffon*. *Griffon* was constructed above Niagara Falls and, at approximately 21.3 m long with a 4.9 m beam and 2.4 m draft, displacing 60 tons, was built to explore and trade in the upper Great Lakes. *Griffon* is of note not only because it was the first and only ship on the upper lakes prior to 1760, but because it was likely a galliot (Ericson 1969a:92,97; Barry 1996:14). Galliots were most widely used in the shoal waters of the Netherlands and the application of this type of vessel to the Great Lakes is an interesting adaptation of 17th-century technology to solve the same problem faced by lake schooners in the 19th century: obtaining maximum cargo capacity in a seaworthy vessel capable of operating in extremely shallow waters.

From 1688 to 1694 the French were excluded from Lake Ontario, but upon their return they rebuilt Fort Frontenac and built new ships to ply Lake Ontario, with four government ships on the lake by 1743 (Cruikshank 1926:3; Pound 1945:9). This was also the period when the bateaux came to replace the canoe as the principal mode of transportation on Lake Ontario. While ships helped to control the lake, the majority of transportation was done by bateaux. Bateaux were first recorded in Montreal in 1671 and were introduced to Lake Ontario in large numbers for the first time in 1685 when the

French raided the Iroquois near modern Rochester, New York (Barry 1996:15; Crisman 1996:131-132). These vessels had a pronounced advantage over canoes in that they could carry substantially more cargo while maintaining a shallow draft. A 1749 observer described bateaux as 5.5-7.3 m long and 1.1 m wide, while Basil Hall noted that the bateaux of the 1820s were 12.2 m long and 2.4 m wide, and that even when carrying five to six tons of cargo drew only 51 cm of water (Hall 1829:361; Crisman 1996:131-2). Clearly these vessels increased in size over their period of use to accommodate ever larger cargos. Bateaux had the additional advantage that their nearly straight sides, flat bottom, and identical ends made them easy to produce. Bateaux could be quickly put into service for a large trading venture or military expedition. While bateaux dominated trade on the St. Lawrence until the mid-19th century, canoes remained the primary vehicles of the fur trade. Canoes were able operate in extremely shallow rivers and portage around rapids, where a heavier bateaux would have been a liability. However, both canoes and bateaux were poorly suited for traveling on the open lake and as a result tended to hug the shore, only entering open water to cut between headlands. As a result, much of French transportation on the lake mirrored the river and lakeshore routes of the Native Americans (Wheeler 1972:285; Brown 1985:372; Barry 1996:26,28,30).

With this mixture of nearshore and blue-water routes and open- and decked-vessels the French came to dominate Lake Ontario over the next half century. In addition to the forts at Niagara, Kingston, Oswego, and Irondequoit they maintained several trading posts and utilized natural harbors as rendezvous locations. The majority of these posts and forts were not built at Native American village sites. Rather they were positioned at resource and transportation nodes, fishing locations, landings, or portages (O’Callaghan 1854:655,907, 1855a:894). In this way the French settlement and communication system was overlaid on the native system so as to intersect it without replacing it or completely adopting it. For example, the French began using Frenchman’s Bay and Pultneyville as sheltered anchorages where they could meet Native Americans coming across adjacent portage routes (NYSOPRHP site file 11714.000022; Burgar 2000). They also built a *Cabane de Plomb* (Lead-Shot House) near Oshawa, which is indicated on 1755 map. This trading post was situated in proximity to the portage route between Lake Simcoe and Lake Ontario that purportedly ran along what are now Simcoe and Ritson streets in Oshawa. Due to changes in the lake level and littoral, this site, which when inhabited likely sat on the shore of a small harbor formed by the drowned mouth of Harmony Creek, is now submerged in Second Marsh (Stephenson 1996; Savage 1997).

As these small trading sites proliferated and a handful of farmsteads were established, Fort Frontenac became a major transshipment center for the Great Lakes. Quebec and Montreal remained the primary government and economic centers, with Louisbourg as an additional port of entry. Merchants and government employees at these ports then sent supplies to Frontenac and Niagara on Lake Ontario and Michilimackinac and Detroit on the Upper Lakes, or, more often, to Frontenac, then to Niagara, then Detroit, and then Michilimackinac as a shipment snaked from port to port. The administrators at these sites distributed the supplies to smaller posts, from which they eventually filtered to settlements and individual traders. The same process was repeated in reverse for furs leaving the interior and bound for Europe. Situated at the confluence of the St. Lawrence River and Lake Ontario, Fort Frontenac was the first stop for most supplies and the last for most furs as they entered and left the hinterlands (Burleigh 1973:6; Brown 1985:111-113,371-372).

The French also understood that controlling Lake Ontario was fundamental to the continued flow of furs out of the Upper Lakes and maintained shipyards at all of their forts, as well as three armed schooners on the lake ca. 1755 (Ten Cate 1982:7,10; Crisman 1996:130,139). *La Marquise de Vaudreuil* carried 8 8-pound cannon, 8 6-pound cannon, and 8 swivel guns that fired 2-pound shot, as well as 30 sailors, 50 marines, and 1 officer. *Le Huron* was slightly smaller and armed with eight six-pound cannon, four four-pound cannon, and six swivel guns. Eight sailors, 40 marines, and 1 officer manned *Le Huron*. A third, unnamed schooner accompanied these two, carrying 6 4-pound cannon, 5 3-pound cannon, 5 swivel guns, 6 sailors, 25 marines, and 2 sergeants. Similar to the use of a galliot model for *Griffon*, these vessels anticipated later Great Lakes practice with their square topsails, which can be easily regarded as the predecessors of the gaff topsail employed by during the 19th century (O'Callaghan 1858:482; Pound 1945:312-313).

The French and Indian War and the Decline of French Dominance

With the French in control of Lake Ontario by the first decade of the 18th century, the British found themselves in the same position that the French had faced a century earlier against the Iroquois. While the British dominated the southern East Coast of the continent, they were struggling to obtain a toehold in the Great Lakes and were largely barred from the interior. Meanwhile, the French could bring materials up the St. Lawrence River, through Lakes Ontario and Erie, and then down the Mississippi River to their Louisiana colony, completely avoiding the British on the East Coast.

By 1724, the British had installed traders with the Seneca and other Iroquois Nations and encouraged their traders to establish themselves along the south shore of Lake Ontario so as to intercept furs bound for Canada. While British Governor William Burnet claimed that this access to lakeside trade was a great success, other contemporary estimates suggest that the British were kept almost entirely off of the Great Lakes and that 80% of the furs sent out by British agents were purchased from the French rather than from Native Americans (O'Callaghan 1855c:701,729,743,766). In order to rectify this situation the British built a blockhouse at Oswego and established a trading post with approximately 70 cabins along the west bank of the Oswego River. Despite a 20 July 1727 letter from Marquis de Beaucharnois, the Governor of New France, to Governor Burnet claiming that the new outpost broke the Treaty of Utrecht and violated France's claims to the Great Lakes and all surrounding lands, the British refused to surrender the post (O'Callaghan 1855c:827-828; Fay and Fay 1927:K2-K3). As Lieutenant Governor George Clarke expressed to the Duke of Newcastle in a letter dated 22 April 1741, "At present what this province has to do is to preserve Oswego…" (O'Callaghan 1855a:184). The importance of Oswego was not only as a purchase point in the Great Lakes but also as the entrance to the land and water route between the lakes and the Mohawk River. Adopted from the Iroquois, this route became a major thoroughfare with as many as 500 bateaux traveling in a single shipment (O'Callaghan 1855c:729, 1858:483).

By the 1750s the British were confident enough in their hold of Oswego to begin contemplating a lake fleet with the expressed purpose of contending with the French military vessel (ca. 1751) or vessels (after 1755) (O'Callaghan 1855a:745, 894-895). Tensions in the region were clearly building and Nicolas Bellin was wise not to include political boundaries on his 1755 *Partie Occidentale de la Nouvelle France ou Canada* map.

The French and Indian War was declared in 1754 and within a year the French launched *La Marquise de Vaudreuil* and *Le Huron* and William Shirley, Governor of Massachusetts and Commander-in-Chief of British Forces in North America, ordered a shipyard established at Oswego. It was in that yard that the first British vessel on the Great Lakes was constructed. *Oswego* was sloop rigged and measured 13.1 m long and 4.6 m in beam with a 2.1 m depth of hold, displacing 100 tons. Several other ships followed quickly thereafter, with the French eventually manning five schooners, three brigs, one ship-rigged corvette, one sloop, and three gunboats to Britain's one snow, one brig, one sloop, and two schooners. (O'Callaghan 1856:136, 1858:403,415,477; Alford 1957a:89-91; Ericson 1969a:93,95; van Gemert 1972:288; Inland 1984:295; Mika and Mika 1985; Barry 1996:15)

Oswego Harbor was only 2.4 m deep during this period, limiting the size of the vessels that the British could build there and making it difficult for the British to launch *Oswego* (O'Callaghan 1858:403). However, the fort was a threat, and, as a French general told members of the Five Nations, "Your brethren the English built a trading house at Oswego, in order to get bever [sic], but they brought a great number of cannon there. Now as cannon are not fit to kill bevers with, I went and kicked the house down" (O'Callaghan 1856:233, 1858:308). The general was referring to the 15 August 1756 attack on the town by Louis Joseph, the Marquis de Montcalm. Montcalm and 3,000 soldiers razed the fort and shipyard, forcing the British to abandon the site until 1760

(Alford 1957a:93; Ericson 1969a:96; Ten Cate 1982:9). This attack was an interesting commentary on the importance of Lake Ontario in the local 18th-century psyche. The guns of Oswego's Fort Ontario were aimed towards the water, expecting an attack from the same direction as trade. Montcalm, however, landed his troops at Wine Creek and marched them west to position their guns on the undefended landward side of the fort. Completely outflanked the British were forced to abandon the fort. During this period, and for at least the next 50 years, Lake Ontario was, metaphorically, an island with settlement clustered around its shore; small forays of pioneers and trappers were sent out into the wilderness but always returned to focus on the lake.

While Montcalm's attack gave France complete control of the lake for another two years, the British were not quelled; during 1758 Lieutenant Colonel John Bradstreet and his "Batoe Service" returned to Lake Ontario via the Mohawk and Oswego rivers and destroyed Fort Frontenac. A year later, Fort Niagara also fell. Finally, in 1760, General Jeffery Amherst orchestrated a three-pronged attack on Montreal with one wing ascending the St. Lawrence River from Quebec, another coming down Lake Champlain, with the main force descending the upper Saint Lawrence to cut off a retreat into the interior. This ended the war in North America (Ten Cate 1982:8,24; Turner 1994:186; Crisman 1996:142). However, even as the French government and military left the region, French traders remained on the land; when Governor John Graves Simcoe sailed into Toronto Harbor three decades later (1793) to establish the town of York (Toronto) he was met by Jean Baptiste Rousseau. Thus, the continued palimpsest of culture on culture continued: the Iroquois on their neighbors, the French on the Native Americans, and then the British on the French. None of these groups entirely left the area; they were simply overshadowed by the next dominant culture.

Growing British Control and the American Revolution

The 1763 Treaty of Paris officially ended the French and Indian War and its European manifestation, the Seven Years War. As part of the treaty, Canada was ceded to Britain. Immediately following the Treaty of Paris, King George III issued the

Proclamation of 1763, restricting colonial settlement beyond the Appalachian Mountains. This proclamation did not delimit a fixed boundary, but did establish rules for purchasing lands from Native Americans that were designed to curtail their exploitation, essentially leaving the Canadian shores of Lake Ontario and much of central Canada as a Native American reservation for several years (Skelton 1921:9; Inland 1984:269). At the same time, the British continued to occupy the string of forts (Fort Schuyler, Fort Brewerton, and Fort Ontario) that they had built during the French and Indian War to defend the portage from Lake Ontario to the Mohawk River. The Iroquois had agreed to these forts during the war on the promise that they would be demolished at the end of hostilities. The British, however, saw them as a way to strengthen their grip on the interior and declined to abandon the posts, much to the chagrin of the Iroquois. The British also strengthened their control of Lake Ontario by constructing Navy Hall and its associated wharf beneath Fort George on west bank of the Niagara River in 1765. The hall was used to store naval supplies and house sailors during the winter, giving the British a permanent naval presence on the lake (O'Callaghan 1856:577; Gilchrist 1985:3-4; Turner 1994:187).

The Provincial Marine (1765-1813) was also established at this time. The Provincial Marine was a separate Canadian naval force that operated on the Great Lakes and Lake Champlain under the direction of the Quartermaster General of the Army in Canada. The Marine drew some of its officers and much of its supplies from the Royal Navy, but the majority of its officers were former lake commercial vessel captains. The Marine also took on former French naval officers, such as Captain La Force who had commanded *La Mise de Vaudreuil* (Smith 1997:86). While effective in controlling Lake Ontario in the years following the French and Indian War, the Provincial Marine also did much to stymie the commercial development of the Great Lakes. The Marine was given a monopoly on all Great Lakes shipping, and private shipping was forbidden until 1785. Supplies and merchandise were transported, but only on the small number of King's ships, seriously handicapping development. As late as the 1770s there were only five vessels on Lake Ontario and nine on Lake Erie (Ericson 1969a:23; Barry 1996:97; Minnesota 2004).

While the war between Britain and France had been an arms race on Lake Ontario, the first war between Britain and her North American colonies (1775–1783) focused on the East Coast to the exclusion of the Great Lakes. Neither the war, nor the treaty that followed, had a pronounced effect on Lake Ontario. The British held the lake for the entire war, forcing the Americans to use overland routes, greatly decreasing the efficiency of their war effort. Meanwhile, the British were able to ship goods up the St. Lawrence River to their newly established depot at Fort Haldimand on Carleton Island where the St. Lawrence leaves Lake Ontario. From there supplies and men were shipped to Fort Niagara and on to western posts, giving the British control of the entire interior. The close of the American Revolution, however, brought massive cultural changes to the Lake Ontario region.

CHAPTER VI

THE EUROPEAN FLUORESCENCE ON LAKE ONTARIO: BRITISH OCCUPATION THROUGH THE MODERN ERA

> Finally it is important to recognize how activities in one part of the city are linked to developments in other areas, and how they are all part of larger processes of historic change. In this way each investigation of an archaeological site, from an Iroquoian village to a nineteenth-century farmstead, a mill, a waterfront industry or a working class New Town cottage, will not only provide information about a discrete period or place, it will also contribute to our understanding of the dynamic process of urban growth and the interdependence of human communities.
> (Carruthers and Williamson 2004:24)

Settling the Lake Ontario Shore

United Empire Loyalists and the British Settlement of Lake Ontario – Settling the North Shore

The British did not immediately grasp the richness of the American interior even after the French and Indian War. Blinded by their focus on coastal commerce, the Lords of Trade and Plantations went so far as to declare Newfoundland to be worth more in wealth and trade than Louisiana and Canada combined in 1761 (Pound 1945:91; Mika and Mika 1985). The Quebec Act of 1774 allowed for French civil law in Canada and permitted French Roman Catholics in the province to have rights and privileges not then allowed in anti-Papist England. The majority of English colonists were uncomfortable moving into a French-dominated area. Consequently, the Quebec Act, as well as the Proclamation of 1763, did much to concentrate English settlers on the eastern seaboard while leaving the interior largely undeveloped (Ten Cate 1982:24). The American Revolution, however, gave the British some indication of the importance of Lake Ontario for controlling natural resources, trade, and military strategy in the North

American interior. Essentially, they learned the same lesson that had been repeated in many of their other colonies: maritime power allows control over large distances but this control is limited to the range of your guns and the tenacity of your blockades and is therefore relatively weak (Hugill 2005:109,125).

To rectify this situation, it was necessary to own the land as well as the lake, and owning the land required not only forts but settlement. The necessary surplus population to settle the large tracts of wilderness surrounding Lake Ontario came in the form of United Empire Loyalists displaced from their homes and farms by the American Revolution. As John Clarke (2001:37) has described, Thomas Paine

> argued that monarchy was dangerous, destructive, silly, and contrary to God's law. Those ideologically at variance with such views remained quiet or carried their more conservative ideology to Canada, where they were known as Tories, or after 1775, as Loyalists.

A Tory by definition believed that God had granted the power to rule to individuals in the past (e.g. David and Noah) and that power had been passed down to the current monarch. Thus, the king's power to rule was a God-given right, although this power was broadened to the three estates of Crown, Lords, and Commons after the Glorious Revolution (1688). The term "Tory," however, became a pejorative so that "United Empire Loyalist" or simply "Loyalist" is more common today.

The initial plan conceived by General Frederick Haldimand, Governor of Quebec, and Lord Germain, Colonial Secretary of State, during the winter of 1779-1780 was to settle Loyalists near the principal forts along Lake Ontario's north shore. These settlements were to support the fur trapping industry and the forts through labor and agricultural production. They were also to be only temporary homes for the Loyalists, places to stay until it was safe to return to their farms south of the border (Pound 1945:119,122). These plans were predicated on Britain winning the war and did not take into account the full number of Loyalists who would eventually settle in Canada. The end of the war caused a substantial migration out of the U.S. Although some migrants (numbering in the hundreds) who supported the rebel colonists moved southward from

Canada into the United States, and there was also a northward movement of Native Americans who had supported the British, the overwhelming proportion (in the thousands) of the migrants were Loyalists leaving the former colonies (Hansen and Bartlett 1967:92; Mika and Mika 1985:252).

The first Loyalist settlement on Lake Ontario was on 4-mile (6.4-km) wide strip of land along the west bank of the Niagara River that the British purchased from the Seneca Iroquois in 1781. Initially small (16 families totaling 68 individuals), the settlement was nonetheless the largest on the lake. With the end of the war, and an influx of Butler's Rangers and other provincial troops, the Niagara Peninsula population quickly expanded. As the population grew so did the local infrastructure. The traditional Iroquois trail through the area was widened to permit wagon travel and other roads were cut as small towns developed wherever streams met the lake (Richardson 1916:34; Coombs 1930:74; Pound 1945:126; Mills 1972:3; Hughes 1993; Turner 1994:189). This early settlement and the natural advantages of the Niagara Peninsula led to some of the major 19th-century shipping and shipbuilding cities on Lake Ontario. For example, Port Dalhousie was settled as a grant to Butler's Rangers and St. Catharines was established during this period where the Iroquois Trail crossed 12 Mile Creek (Turcotte 1986:5; Jackson and Wilson 1992; Turner 1994:199).

The end of the war and the Treaty of Paris (1783) caused a population boom not only on the Niagara Peninsula but also at the eastern end of the lake. The decision was made to settle the bulk of the Loyalists along the St. Lawrence River and Bay of Quinte, and during the summer of 1783 work parties arrived to rebuild Fort Frontenac as a nucleus for future settlement. At the same time, a survey was conducted of the eastern north shore that would greatly influence the future shape and use of the landscape. Five townships were surveyed along Lake Ontario west of Kingston (Ernestown, Fredericksburg, Adolphustown, Marysburgh, and Kingston) and nine were surveyed along the St. Lawrence River from Lancaster to Elizabethtown (Figure 6.1). Each township was 6 miles (9.7 km) on a side and contained 25 lots of 120 acres (48. 6 hectares) along 7 concessions, with space reserved for roads and town plots. The

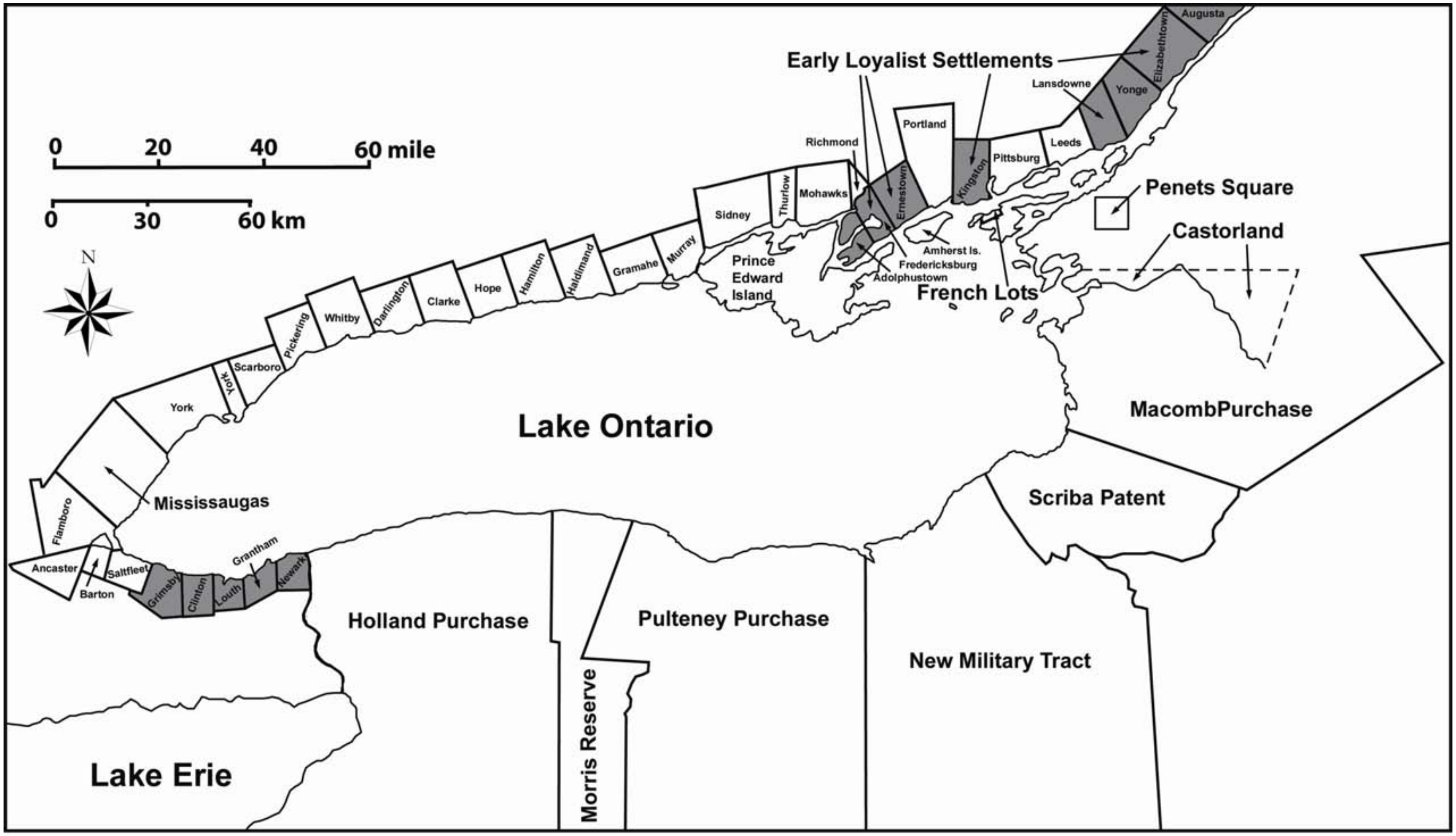

FIGURE 6.1. Late 18th and early 19th century land divisions.

baseline for each township was run as close to the waterline as possible but did not actually follow the shore so as to keep the township within a regular rectangle. As a result of this practice, there are now many “broken front” lots south of the baseline. In general, the survey was hastily completed with some mistakes in the measurements. Many lots were surveyed at 200 acres (80.9 hectares) rather than 120, and only the front corners of a few lots along each concession line were staked out. The remaining lots were left for later or to be extrapolated from the existing stakes and settlers were expected to run the lines along the sides for themselves. Counteracting the settler’s natural temptation to expand his lot was the penalty of death for tampering with the boundary stakes (Mika and Mika 1985:252). When settlement started in 1784 there was an attempt to settle in a single area disbanded military groups or Loyalists associated by a common religion, ethnic identity, or social background. Thus Kingston and Adolphustown were settled by families from New York City and a large Quaker population congregated in Prince Edward County (Richardson 1916:30-31; Burdick 1965; Mills 1972:3-4). In this way both the division and the face of the landscape was formed early on.

Within this basic structure, the majority of early (pre-1788) settlers were either Loyalists, the children of Loyalists, or military claimants. Each Loyalist was entitled to 200 acres (80.9 hectares) plus 50 acres (20.2 hectares) per child, while military claimants were granted acreage based on their rank. The distribution of lands was by lot. However, there is evidence that in practice the lands were distributed in such a way as to reflect an individual’s status or “quality,” so that better-connected families received better and more lands. Once the land was inhabited for one year, the Loyalist was entitled to the permanent deed (Richardson 1944:23; Pound 1945:132; Clarke 2001:449,456). In addition to lands, Loyalists were provided with clothing, seed, tools, weapons, tents, boats, animals, and, later, churches, sawmills, and gristmills (Pound 1945:132). All of these allowances were intended to give the Loyalists a foothold in the wilderness and to move British settlement on Lake Ontario forward. By 1788 the majority of the political refugee Loyalists were settled in the region (approximately 6800) and the government practices of allowances ended (Hansen and Bartlett 1967:92).

A second phase of settlement began with the Constitutional Act passed in 1791. The Constitutional Act divided Canada into two provinces: French-dominated Lower Canada and English-dominated Upper Canada in the Lake Ontario region (Skelton 1921:30). The division and names of these provinces indicate the political and geographic mindset of the period. The provinces were named relative to the St. Lawrence River, which flows northward out of Lake Ontario, rather than prescribing to a boreocentric perspective where “up” equates to “north.” The river was the single access route to much of Canada and its geography figured prominently in how Canadians visualized their country. Additionally, one of the driving forces for this division was demand from the growing Loyalist population for the traditional rights of Englishmen, something that the Quebec Act did not guarantee in the interior. The divided provinces formed more manageable and internally homogenous administrative units.

The appointment of John Graves Simcoe as the first Lieutenant Governor of Upper Canada and a new period of recruiting settlers to the region also resulted from the Constitutional Act. Settlement was now opened to anyone who would take an oath of loyalty, and grants of up to 200 acres (80.9 hectares) were given for the cost of survey and paperwork. The new townships laid out to accommodate these new settlers fronted on the lake and river for 9 miles and extended 12 miles inland. Within each township, one-seventh of the lots were reserved for the profit of the clergy and an additional one-seventh was reserved for future use or sale by the Crown. Many of these remained undeveloped even in the 1820s. Additionally, the Crown reserved mineral rights and timber that could be used by the Royal Navy (Simcoe 1795; Richardson 1944:22; Wood 2000:21). The clear intent of these inducements was to recruit settlers who would be nominally loyal to Britain and who would work the land and form a living badge of British domain without interfering with yet-unrealized economic resources. As a result of these inducements, the population of Upper Canada grew to approximately 10,000 by

1791 and an additional three townships were added to the Lake Ontario shore west of Kingston (Ten Cate 1982:29-30; White and Montgomery 1994:36).

Similar to the initial (1783-1788) Loyalist settlements, the influx of "late Loyalists" had a marked effect on the shape and face of southern Ontario. In some instances the new settlers swamped the initial Loyalists, in others the two immigrations reinforced each other. In terms of the shape of the land, the new townships very much resembled the original five along Lake Ontario. Until 1815, each lot measured 19 chains along its front facing the baseline and 105 chains deep for 200 acres (1 chain = 66 ft; 20 m). After 1815, the measurement was changed to 30 by 67 chains. Roads were supposed to follow the lot lines and were to be laid out prior to settlement, providing an orderly appearance to the landscape. A drive through modern Ontario clearly shows the result of this plan with remarkably straight streets named after concessions or simply called "Baseline Road." However, the same trip also demonstrates the failings of the system. It is extremely difficult to lay an arbitrary grid on the natural landscape, and plans that looked practicable on a map were often untenable in the wilderness. Many roads, consequently, yielded to slope and water or followed existing trails that, through millennia of practice, had determined the path of least resistance across the landscape. Similarly, the survey proceeded unevenly and some settlers failed to cut the roads that they had promised, producing noticeably varying baselines, lots of different shapes, and odd road patterns (Mika and Mika 1985:252; Wood 2000:21).

Land speculation was also a concern. Speculators held as much as 62% of Upper Canada, although this problem was most pronounced on former Native lands and less along Lake Ontario where the majority of grants were to individual Loyalists and disbanded troops. However, within the Lake Ontario tracts, officers were granted as much as 5,000 acres (2,023.4 hectares). The intent of these large allotments was to provide structure to the townships by giving more land to "better" people thereby allowing them to lead the townships. Many officers, however, sold their lands to speculators, leading to the consolidation of tracts and large patches of underdeveloped lands. Combined, these forces made the settlement of Lake Ontario's north shore less orderly than Simcoe and other leaders would have liked. The result was a patchwork of private tracts and independent surveys, not so different from what was developing on the New York side and exactly what the British government was trying to avoid (Mills 1972:4-5; Wood 2000:21; Clarke 2001:457-458).

Regardless of the orderliness of the settlement, the influx of settlers into the region set the development of southern Ontario ahead by a generation. The rapid growth of the population and the massive investment by the British government, as much as $30 million, established a stable but rapidly developing population around Lake Ontario that not only deterred French and American encroachment, but also began to shift the Canadian heartland to the west (Pound 1945:128-136).

The initial population was largely single men and young married couples defined by their loyalty to Britain. The majority of these individuals stayed on in the region and within 50 years the community was demographically stable, with children making up just under half of the population. Social stability developed along a similar timeline. The initial Loyalists were a diverse population, made up of different nationalities, many of whom were first-generation Americans. Their sole common bond was wishing to leave the newly-formed United States. The level of commitment to Britain varied, with some genuinely wishing to live under the monarchy and others, perhaps more cynically, having simply supported the wrong side. Added to this mixture were some who saw the northward migration as a chance to gain new land. However, the overriding factor in immigration to the north shore was loyalty to the Crown and Canada and an aversion to all things American. These feelings became part of the culture of the region. Town meetings, associated with rebellions in France, Ireland, and America, were avoided and "Democrat" and "Republican" were insults (Mills 1972:2; Clarke 2001:40-41).

Despite these political ideas, the settlers were overwhelmingly from New York, followed by Vermont, New Jersey, and Pennsylvania, where most of them had been subsistence farmers. As a result, they brought their pre-war subsistence and settlement patterns with them as well as their ideals and social mores (Pound 1945:132; Mills

1972:2,11). As a result a commentator describing Canadians and Americans in 1837 was hard-pressed to clearly distinguish the two:

> His [American] bearing is ungraceful but not mean. His thoughts are limited but practical. He has a head full of wild speculations, and is very fond of making new inventions, some in fact very ingenious…The character of the native Canadian differs but little from that of the Yankee, but any inference that might be drawn would be rather favourable to the latter (Mills 1972:18-19, quoting Captain Charles Gifford).

Similarly, the farming practices of southern Ontario were also not remarkably different from New England and New York. Family farms oriented towards cultivating as much land as possible instead of intensively cultivating and fertilizing a limited area were the norm. These practices were so pronounced that American-born settlers in early Ontario were often referred to as "land-butchers" (Mills 1972:11; Wood 2000:xvii). A nearly constant stream of American immigrants through the first decade of the 19th century (as many as 10,000 annually) reinforced these initial practices. The relative abundance of inexpensive lands drew some settlers away from the generally westward trend of American expansion and led to a mixture of American-born settlers of German, Dutch, Scotch-Irish, and English descent. This pattern resembled the filling of Texas a few decades later (Pound 1945:212; Mills 1972:10; White and Montgomery 1994:37; Wood 2000:23).

The relative porosity of the border helped this movement. While the border was understood as Lake Ontario during this period, the account of John Wiley Bedford clearly demonstrates how little regard most settlers had for this international boundary. His family moved unobstructed from Bath, Ontario to Grenadier Island south of Cape Vincent, New York not long after the War of 1812 near the height of border concern (Bedford 1998:57,138). Movement across the lake was likely just as easy prior to the war. As a result of the constant flow of Americans into Canada, Loyalists began to complain to the government in 1806, and legislation was passed in 1814 to refuse lands to Americans. However, by this time approximately 80% of the 80,000-90,000 residents of Upper Canada were American by birth, only 25% of whom were Loyalists or their children. These later settlers were also not evenly distributed throughout the province. The lands near Kingston and Niagara filled up first, with later arrivals slowly expanding west along the shore from the mouth of the St. Lawrence River. As a result, the level of loyalty to the Crown waned from east to west. The number of Americans may have alarmed conservatives but the population boom, nearly 15,000 more souls than had settled in New France and Louisiana during a century and a half of French occupation, had an unarguable benefit on the economy. The vast majority of these new Canadians settled along the lakeshore, creating the critical mass necessary to support industry and social organizations (Pound 1945:164,169; Mills 1972:7; Burleigh 1973:9; Cain 1987:22; White and Montgomery 1994:38; Wood 2000:28).

The legislation banning American settlers from Ontario was lifted in 1817 and U.S. immigration continued at a lower rate. Many would-be settlers were discouraged by the seven years occupancy mandated for a land title, which required a serious investment in the community rather than the opportunity for quick profit. Immigration did continue, however, until 1825 when the Erie Canal opened the Midwest and provided a viable shipping route beyond Lake Ontario (Meinig 1966b:171; Mills 1972:7-8; Turner 1994:195-196; Wood 2000:45). By 1837 the flow of immigrants was largely reversed, with Canadians leaving Upper Canada for the Midwest (Mills 1972:8-9).

As immigration from the U.S. was beginning to wane, the tide of European immigrants, in particular Irish, was beginning to rise. As a result of post-Napoleonic War economic decline a substantial number of Irish Ulstermen began to come to North America. Initially, they opted for the U.S., but shifts in fares and inducements from British agents attracted them to Canada after 1818. The majority of these Ulstermen were Protestant, middle-class farmer-weavers who integrated into the existing Scottish and English communities of Ontario. In general they purchased available lots, often in back townships, rather than settling in homogenous groups, thus speeding their assimilation (Mills 1972:140-144,163-164,167). With this influx from the British Isles, and through natural increase, the population of Upper Canada reached 30,000 in 1833 (White and Montgomery 1994:38).

This increase, however, paled when compared to the second wave of Irish that began in the 1840s and helped to balloon the Upper Canada population to one million by 1851. As the Ulster immigration slowed they were replaced by increasing numbers of Irish Catholics driven to Canada by the potato famine. The U.S. banned many of these immigrants from entering so Canada received a disproportionate number of Irish refugees. In 1847, 60,000-70,000 Irish arrived in Canada. While within a year approximately 30% died of disease (primarily of cholera), and nearly half moved to the U.S. where opportunities for wage labor were more prevalent, a continued deluge that lasted nearly a decade had a profound effect on the Canadian populace. By the end of the 1840s, 10% of the Ontario population was made up of relatively recent Irish immigrants and by 1871 no county in the province included fewer than 1,000 people of Irish descent (Mills 1972:139,153; Wood 2000:82-83). Many of the Irish Catholics settled in the Kingston region. The populations of Kingston and Wolfe Island townships were 20-30% Irish by 1851 and the city of Kingston was over 30% (Mills 1972:172). The presence of large public projects, as well as lumbering, in this region made it particularly attractive. Their overwhelming numbers allowed the Irish to establish monopolies in many wage jobs, leading to dense populations. In the Kingston-Ottawa region, the Rideau Canal project first attracted a substantial number of Irish as laborers, some of whom later settled along its route. Others moved on once the canal project was completed, heading to Ottawa (Bytown), where they displaced the French as the backbone of the lumber industry. A similar pattern was evident along the Welland Canal route and later in railroad construction (Mills 1972:148-149,157).

The Irish, however, were not the only ethnic group that immigrated to Ontario during this period. Failed European revolutions also drove a substantial number of Germans and others to Canada after 1848. Consequently, by 1881 the heritage of the waterfront townships of the north shore was 43% English, 33% Irish, 15% Scottish, 4% German, 2% French, 1% Dutch, and 1% African (White and Montgomery 1994:38,46).

The remnants of French Canadian culture persisted, as did a strong contingent of those with Loyalist and ex-British military heritage, as well as disparate groups from Great Britain, Europe, and America, some of whom had settled cohesive units forming distinct local identities. As David Wood (2000:47) put it: “If one could recreate the verbal interchanges of such an area in the mid-nineteenth century, one would be assailed by the strikingly incongruous cadences of Old World dialects ringing through the rough New World landscape, with little of what one could call North American speech.”

American and French Settlement of Northern New York – Settling the South Shore

American settlement south of the St. Lawrence River followed a similar, although slower pattern. Settlement in northern New York was initially limited by the presence of the Iroquois and then by the Treaty of Fort Stanwix (1768). However, the Sullivan-Clinton Expedition (1779) against the Iroquois and Loyalists of western New York introduced many eastern colonists to the riches of the region. Nevertheless, it was not until 1796 that the region became readily accessible to most Americans. In that year, under pressure from other European countries and facing concerns at home, Britain withdrew from its Great Lakes forts (Pound 1945:128,138,148; Schramm 1987:20). Due to this delayed start, the New York shore, except at Oswego, was an almost unbroken wilderness in 1800. Oswego, connected to the southern population base via the Hudson, Mohawk, and Oswego rivers, was settled nearly as early as the Canadian shore, but other portions of the American littoral remained undeveloped into the second decade of the 19th century. This slow settlement seems to have worked itself into the psyche of the period with health, rather than political, reasons often listed as the cause. The lakeshore was believed to be a hotbed of fever and ague (malaria) that would cut down any who tried to settle there (Richardson 1916:33; Melish 1970 [1818]:537; Mills 1972:7; Bedford 1998:14).

Difficulties in settling the area were exacerbated by conflicting state and Native American claims to the lands and ineffective land granting procedures. Most settlers were hesitant to move to the region until the land claims were sorted and they could be guaranteed clear title to their property. The “New” Military Tract was in the Oneida-Onondaga area of New York and was intended as grants for veterans of the American Revolutionary War. However, Massachusetts also had a claim to the land. Massachusetts asserted that its boundaries extended inland following the colonial charter, but New York had expanded up the Hudson River effectively taking over these lands. The Hartford Treaty of 1786 resolved this conflict by granting lands to the west of the Pre-emption Line (77° Longitude, also the 82nd milestone on the Mason-Dixon Line, extending through the Sodus Bay area on Lake Ontario) to Massachusetts and those to the east to New York. Massachusetts could profit from the sale of its lands but the area was to be administered by the New York government. The treaty also required that all Native American claims to lands be extinguished through direct purchase or treaty with the Native owners (Pound 1945:139; Lamb 1956b:7; Meinig 1966b:141).

Grants to veterans in these areas ranged from 600 to 6,000 acres (242.8-2,428.1 hectares), depending on rank. Purchases from Native Americans tended to be large tract of land, and both Massachusetts and New York tended to dispose of their land in large tracts (thousands to millions of acres). All this led to rampant speculation which, in turn, resulted in a patchwork of surveys and uneven development that alarmed Lieutenant Governor Simcoe and influenced his design of the Ontario land granting system. It was not, however, entirely deleterious to the New York shore. Many speculators needed to sell land quickly to pay debts and others offered land on credit, thereby making land readily available. Others hoped to make a profit by selling the land once the area had been developed, and to that end invested in roads, mills, villages and other improvements. In general, the availability of land outstripped demand and prices never became overly inflated (Pound 1945:140-142; Meinig 1966b:141-142).

Similar to the “late Loyalists” who were arriving on the north shore during the 1790s, the earliest settlers in northern New York were New England subsistence agriculturalists bolstered in number by farmers from Pennsylvania and New Jersey, and limited numbers of Dutch, Scottish, and Irish immigrants. The majority of these families traveled along the Hudson River before spreading into the region through the Mohawk, Oswego, and Black rivers, while others traveled along the St. Lawrence River and entered via the Mohawk and Black rivers (Lamb 1956a:12; Meinig 1966b:152,144-145). Due to these routes and the agricultural orientation of the settlers, most early settlement was along these rivers and focused on good agricultural land. Added to this pattern was the desire to settle on property with a clear title leading to a "highly selective, uneven, fragmented pattern of advance" (Meinig 1966b:145). These settlements were almost entirely agricultural with little, if any, industry beyond sawmills, gristmills, and asheries for the production of charcoal and potash (NYSOPRHP site file 11714.000022; Pound 1945:267; Meinig 1966b:148).

After nearly two decades of largely indigenous settlement in the region, widespread European immigration to northern New York began in the 1820s. This movement in part corresponded to the early development of urban centers that provided skilled and wage labor opportunities for newly arrived Irish, German, English, and Scottish citizens. This initial wave of Europeans was followed in the 1840s by a more substantial influx of Irish Catholics. The majority of these Irish gravitated towards urban centers and industrial work. Thus, approximately 19% of Oswego's population was first generation Irish-Americans in 1865 and an additional 18% had recently arrived from another European nation or Canada, proportions not drastically different from Kingston, Ontario during the same period (Meinig 1966b:169; Wellman 1988:27).

Unlike the Ontario portion of the archaeological survey area, which was among the first portions of the Lake Ontario littoral to be extensively settled by Europeans, the neighboring New York shore was among the last. The first land sales in the northern counties of New York, often referred to as the North Country, did not occur until 1787. The first non-military settlement in Jefferson County, the county that contains all of the New York survey areas, occurred in 1797 (French 1860; Ewing et al. 1995:27). While this settlement schedule lagged behind that of Ontario, it does coincide well with the Jay Treaty and the arrival of "late Loyalists" in Canada.

The whole of the North Country was part of the Macomb Purchase. This large land purchase made by Alexander Macomb on behalf of himself and his partners, Daniel

McCormick and William Constable, included 3,670,715 acres (1,485,491.6 hectares). It ended for Macomb in bankruptcy induced by over-speculation. Several towns were divided from this purchase south of the Black River, including what is now Hounsfield, large portions of which were sold to Lemuel Storrs and Henry Champion. The lands to the north of the river were sold as a unit to La Compagnie de New York and dubbed Castorland (see Figure 6.1). Castorland was established as a colony for refugees of the French Revolution and attracted approximately 20 families prior to 1800, but eventually failed due to a lack of preparation and leadership (Hough 1854:Chapter 3; Bonney 1985:21; Ewing et al. 1995:29). As Castorland failed, Vincent Le Ray de Chaumont was able to buy land cheaply, ultimately owning 100,000 acres (40,468.7 hectares) in what is now Jefferson and Lewis counties. Le Ray was the son of James D. Le Ray de Chaumont who supported the Rebels during the American Revolution, including outfitting John Paul Jones with five vessels. Vincent was in America to settle his father's reimbursement. He continued the Castorland goal of providing land for French immigrants but was a far better leader than the Castorland management. Besides laying out settlements, he built mills, furnaces, and roads, and imported animals as well (Casler 1906:142; Pound 1945:237-238; Bonney 1985:14,22). This settlement provided the impetus for expanded immigration to northern New York and the settlement of Clayton (1802) and Cape Vincent (1809). By 1810 steady settlement was underway in the North Country and the active role of Lake Ontario in the War of 1812, in particular the navy yard at Sackets Harbor, served to further advertise the region (French 1860; Meinig 1966b:153; Wahl 1974:2; Bedford 1998:66). Similar to the rest of northern New York, the North Country received a steady influx of American and European immigrants through the mid-19th century and was largely settled by 1840 (Bedford 1998:66). However, the opening of the Erie Canal and the shift in settlement to lands adjacent to it largely ended the agricultural and population development of the region.

The Growth of Lake Trade: 1785-1812

In 1777 Governor Guy Carleton banned all privately-owned decked vessels from operating on the Great Lakes because he suspected the merchants of being American sympathizers (Smith 1997:137; Gibson 1999:24). The only large vessels allowed to carry cargo were then naval vessels so that:

> The naval officers if their vessels be not otherwise engaged, are allowed to carry a cargo of merchandize when they sail from one port to another, the freight of which is their perquisite; they likewise have the liberty, and are constantly in the practice, of carrying passengers across the lake at an established price (Weld 1987 [1799]:132-133).

This law remained in effect until 1785 when Governor Frederick Haldimand opened the Great Lakes to private shipping. This decision was bolstered three years later by the Inland Marine Act, which permitted unrestricted commerce on the lakes. In the meantime, however, commerce on the lakes was nearly halted as merchants had to wait indeterminate amounts of time to move their goods from one port to the other (Ericson 1969a:98; Minnesota 2004). The movement of goods also seems to have been tied largely to military installations, the primary destinations of naval vessel, forcing merchants to transship via bateaux or Durham boat any good destined for purely civilian ports. This system led to tremendous bottlenecks and greatly limited the desirability and feasibility of settlement along the much of the lakeshore.

Following the repeal of the shipping ban there was a lag period while merchant vessels were built on Lake Ontario. In 1788 there was only one private vessel on the lake, the *Good Intent*. Over the next decade, however, Canadian merchants launched several more vessels, a number of which were over 100 tons, including the *Lady Dorchester* (120 tons) launched in 1789. American shipbuilding, like American settlement, does not seem to have developed until after the signing of the Jay Treaty. The *Jemima*, a schooner of 50 tons, was the first recorded American vessel launched after the American Revolution when it slid down the ways near the mouth of the Genesee River in April 1797 (Van Cleve 1877:26,96; Cruikshank 1926:6-7; Harris 1984).

While both the human and vessel population of Lake Ontario was growing during this period, an account provided by James Richardson (1916:36-37) exemplifies the dangers and difficulties of shipping on what was still a largely wild and unsettled lake. A captain carrying a load of flour from the Bay of Quinte to Oswego in 1795 wrecked his vessel near Sandy Creek. He walked south approximately 5 km before finding a storm-bound boat near the Salmon River, the owner of which was willing to carry him to Oswego. From Oswego the captain was able to return to Kingston only via Albany and Lake Champlain, because by this time Lake Ontario was closed by winter. Customs collection and vessel registration were also tricky during this period. American customs collection began immediately after the Jay Treaty, but the U.S. and British boats had a mixture of U.S. and British captains, not to mention the crews that often contained members of both nationalities and several ethnicities. Consequently, the parsing of exact jurisdiction was often difficult (Cain 1987:23).

In general, Lake Ontario prior to the War of 1812 appears to have operated as much as an independent geographic region as a domain of either Canada or the U.S. A similar hypothesis arguing for the interconnectedness of maritime peoples and their possible lack of integration with the inland government has been put forth by archaeologists working on the coasts of the British Isles (Loveluck and Tys 2006:162; Noble 2006; Verhaeghe 2006:218). In the case of Lake Ontario, the shared resources and easy transportation of Lake Ontario, as well as the separation of both Canadian and U.S. citizens from their easterly government centers, seems to have fostered a pan-lake merchant identity during the early 19th century. The merchants of Queenston and Niagara were intricately linked with those in Kingston, which were in turn tied into the Montreal commercial system through the fur trade. These 30-40 men dominated trade, situated at the only ports of any consequence on the lake. They were interrelated through civic, political, and family connections allowing them to effectively control trade on the lake as their own private oligarchy of hinterland North America (Weld 1987 [1799]:133; White and Montgomery 1994:35; Cain [1985]:12,14). The figurehead of *Scourge* (originally the *Lord Nelson*) likely reflects the spirit of these merchants (Figure 6.2). The

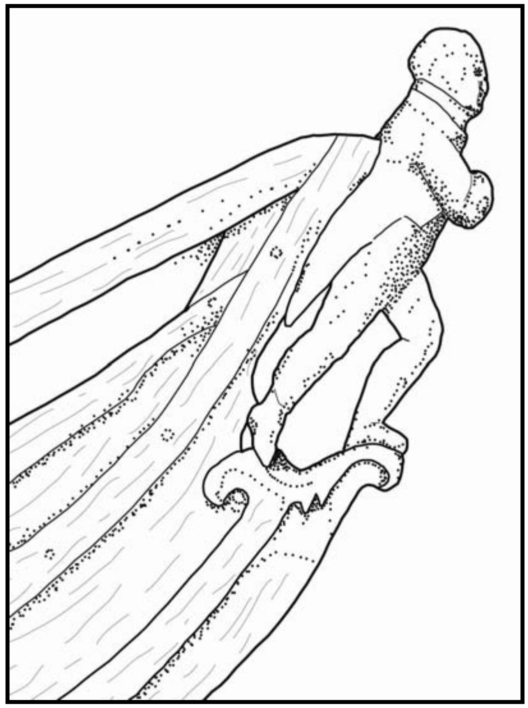

FIGURE 6.2. Figurehead of *Scourge*, formerly the *Lord Nelson*.

figurehead, with both eyes and arms, is too intact a personage to be a literal representation of Lord Nelson, but dressed in fashionable Hessian boots with his hair in a sailorly queue, he may be an idealized lake captain or sailor. His pose, striding forward on a sprig of acanthus leaves, a symbol of classical culture and rationalism, can be readily interpreted as the owner's mercantile and civic hopes for Lake Ontario (Cain [1985]:35). In this context, the eventual seizure of the ***Lord Nelson*** and its recommission and eventual loss as ***Scourge*** is a particularly apt metaphor for the damage caused to shipping and trade by the hiatus of the Embargo of 1807 and the War of 1812.

Prior to the embargo much of the trade was in wheat, salt, pork, potash, whiskey, and finished goods shipped between lake ports or moving west. Much of the raw produce and whiskey was shipped from the American side to the more developed British ports, with some goods consumed there and others, such as potash, sent down the St. Lawrence River to Montreal. There was also a brisk trade in staples and finished goods from both American and British ports to the growing communities on the Upper Lakes.

These communities were generally not self-sufficient and it was cheaper to ship through Lake Ontario and around Niagara Falls than along other routes such as the traditional Ottawa-French River canoe route (Cooper 1905 [1809]; Snyder 1971:50; White and Montgomery 1994). Much of the finished goods and industrial products used both on Lake Ontario and shipped to western ports were produced in the cities of the East and shipped to the lake up the St. Lawrence River or up the Mohawk and Oswego rivers to Oswego. The Western Inland Lock Navigation Company connected Oneida Lake and the Mohawk River via Wood Creek ca. 1800 to partly develop this route (Van Cleve 1877:96; Cain [1985]:8).

The Embargo or Non-Intercourse Act of 1807, which prohibited trade with the British Empire, including Canada, thus put the settlers and merchants of the New York shore in the undesirable position of choosing between treason and starvation. With much of their finished goods, hardware, and industrial products arriving from Montreal, and with Canada consuming a significant portion of their excess produce, many New York residents saw no alternative to smuggling. Up to, and to a lesser extent throughout, the War of 1812 smuggling was rampant, especially in the North Country. With easy access to Kingston by water and over winter ice, Jefferson County was deeply involved in this illicit trade, so much so that the road from Brownsville, NY to Fisher’s Landing on the shore of the St. Lawrence River was known as Embargo Road (Lamb 1956a:12; Ewing et al. 1995:30; Bedford 1998:15). In general, the Canadians did very little to support the embargo on Lake Ontario and continued to accept American goods (Cain 1987). The villages of the Genesee River, for example, traditionally sent the majority of their produce to Kingston. This trade was worth $30,000 in 1806 and $70,000 in 1807. However, in 1808, the year after the Embargo went into effect, $100,000 in goods were exported (Cooper 1905 [1809]). This dramatic increase in value points to not only the rapid development of northern New York but also the wide-ranging ineffectiveness of the embargo on Lake Ontario, an ineffectiveness that continues to argue for the presence of a pan-Lake Ontario identity that transcended national identities.

Helping fuel these lake-wide interactions was no doubt the substantial amounts of money to be made by smuggling. Potash was among the first and most valuable products of most farms. A form of potassium carbonate made from the cleaned ashes of trees burned to clear fields, potash was used as a fertilizer and in the production of glass and soap. It was worth three times the equivalent amount of whiskey and four times more than flour. Prior to the Embargo Act, potash was worth $100 per barrel at Montreal, the principal consumer of potash in the region; during the embargo, that same barrel was worth between $300 and $320 (Lamb 1956a:16; Thomas 1978:40; Cain 1987:23; Wood 2000:109). Clearly there was an economic incentive for farmers and merchants to risk shipping their goods across the border.

The expense of building and manning vessels during the early 19th century partly offset the profits to be made from this trade. Not only did all iron, including fittings and the ship's stove, and most cordage have to be imported either through Kingston or Oswego, but there was a paucity of trained shipwrights along the shore. Vessels built at Ogdensburg in 1809 required shipbuilders to be recruited from Montreal. Asa Standard of Hudson, NY was brought all the way to Lewiston, between Niagara Falls and the lake, to build the *Ontario* in 1808 (Weld 1987 [1799]:133; Cain [1985]:11,15,17). The first ropewalk in the region was built at Niagara Falls, NY (Manchester) in 1810, but, even when using hemp from the Genesee area, this industry required tar from New York City (Cain [1985]:34). The *Lord Nelson* (*Scourge*), one of the few early 19th-century Lake Ontario vessels about which we have accurate information because of the lengthy court case concerning the seizure of the vessel, is a good example of many of these conditions. The hull was built by Asa Standard at Niagara in 1810 for a cost of $1,000. Its stove, sails, and blocks were imported through Oswego and then the length of the lake. However, even with these expenses, the *Lord Nelson* was valued at five times its construction cost when it was launched in May 1811 because of the scarcity of vessels on the lake (Cain [1985]:4-5,17). Once built, the ship remained expensive to operate because sailors were in such demand that it was necessary to pay them during the five months the lake was frozen to insure that they would be available to crew the vessel again in the spring. With a 50-ton vessel of this period requiring four to five men and a master to operate, the costs of maintaining a crew were substantial (Weld 1987 [1799]:134; Cain [1985]:34).

This also appears to have been a period of experimentation among lake shipbuilders. Oak, yellow pine, red cedar, and black walnut all seem to have been acceptable for ship construction prior to 1810. The *Prince Edward*, for instance, was built entirely of red cedar by Edward Murney of Belleville in 1801, and a Mr. Dealy built a black walnut vessel in 1797 near Kingston (Van Cleve 1877:30,32; Cain [1985]:19). Similarly, there seems to have been a transition from square rigged vessels, in particular brigs, to schooners such as the *Lord Nelson* (*Scourge*) and *Diana* (*Hamilton*) during this period. By the beginning of the War of 1812, the proportion of schooners to brigs entering Niagara was nearly eight to one (Marvin 1902:397; Cruikshank 1926:8; Snyder 1971:49). However, the most significant innovation of this period was the introduction of the centerboard. Although possibly more accurately a dagger-board during these early years, the first vessel to employ this innovation was built at Oswego in 1806 or 1807 (Van Cleve 1877:97). Centerboards, which are simply thin wooden structures that can be raised and lowered beneath the vessel through a waterproof trunk near the centerline of the vessel, allowed the shallow draft Great Lakes vessels to have more lateral resistance without deepening the hull. The centerboard was deployed when the vessel was in the open lake to help with tacking and to minimize slippage to leeward, and was retracted in shoal waters to minimize the vessel’s draft.

With this innovation, the shore’s expanding population, and the associated burgeoning needs of commerce and transportation, the number of ships on Lake Ontario grew steadily. From a single private vessel in 1788, the lake fleet had grown to include approximately 15 vessels in 1809 (Cooper 1905 [1809]). While Cooper counted both open and decked vessels in his tally, there were 11 or more decked ships on the lake by 1810. However, most of these vessels remained small (less than 90 tons) and the largest vessel on the lake, the *Charles and Anne*, measured only approximately 100 tons (Van Cleve 1877:98; Snyder 1971:46; Cain [1985]:5). Two years later, at the outset of the

War of 1812, the number of vessels on the lake had increased to near 40 but the size of vessels had grown only slightly. The largest private vessel entering Niagara that year was the schooner *Governor Simcoe* at 136 tons. However, the size of this vessel was balanced by the smallest vessel entering the same port, the 17-ton sloop *Republican*; the majority of vessels ranged from 35 to 55 tons (Cruikshank 1926:8).

A Commercial Interlude: The War of 1812 on Lake Ontario

With the embargo in place and tensions mounting with Britain, the Americans launched their first Great Lakes warship, the 240-ton brig *Oneida*. The vessel was launched in 1809, and, despite its substantial size, had a shallow draft. However, once loaded with guns, *Oneida* was too deep to pass the Oswego bar and never again entered her home port (Anonymous 1810; Alford 1957a:220; van Gemert 1972:290). When war was declared on 18 June 1812, *Oneida* was the only purpose-built American warship on Lake Ontario, as compared to the three British vessels (*Royal George*, *Earl of Moira*, and *Duke of Gloucester*). By the end of the year, the British had added an additional vessel, *Prince Regent*, and the Americans had launched *Madison*, as well as purchasing or seizing nine merchant vessels (*Charles and Anne*, *Genesee Packet*, *Diana*, *Fair American*, *Ontario*, *Julia*, *Collector*, *Experiment*, and *Lord Nelson*). Unfortunately, these vessels had very shallow drafts for operating in lake ports; the addition of heavy guns to their decks raised their centers of gravity dangerously high, making them exceptionally tender (Melish 1970 [1818]:539; Myers 1989 [1843]:55-56,75,90-91; Malcomson 1998:327-329). For the next two years, the war on Lake Ontario was fought by shipwrights rather than captains. Neither the U.S. Navy's Commodore Isaac Chauncey nor the Royal Navy's Commodore Sir James Lucas Yeo was willing to engage the other's fleet without clear superiority in ships and guns. As a result, they jockeyed for position around the lake, occasionally making amphibious attacks on towns such as York (Toronto), Pultneyville, Oswego, and Sackets Harbor, while the shipbuilders at Kingston and Sackets Harbor launched ships at an impressive rate so that their side might have the advantage during the next navigation season (Anonymous 1812, 1813c, 1813a, 1813b;

Myers 1989 [1843]:59-76; Malcomson 1998). As one partisan song of the period describing the American forces, personified by their dispatch schooner ***Lady of the Lake,*** put it:

For a nautical knight, a lady-heigh-ho!
Felt her heart and her heart strings ache;
To view his dear person, she looked to and fro.
The name of the knight was James Yeo.
And the Lady-t'was she of the Lake. (Casler 1906:133).

Kingston was established as a naval base in 1783 when the British moved their base of operation from Carleton Island. As the major transshipment point and the seat of the well-established Provincial Marine, Kingston was a stable and productive shipbuilding location. The Americans, conversely, were forced to move their base to Sackets Harbor because, as ***Oneida*** had proven, Oswego harbor was not suited for large warships. However, Oswego was on a supply route tied to the Oswego and Mohawk rivers, while Sackets Harbor, situated at the mouth of the Black River, was essentially hacked from the isolated wilderness. Materials still had to be imported to Oswego and then shipped north to Sackets Harbor (Ten Cate 1982:36,62). Despite these difficulties nine warships and 15 gunboats were built at Sackets Harbor and its sister-yard, Storrs Harbor, situated immediately east on the Black River (Malcomson 1998). Sackets Harbor's usefulness, however, ended with the termination of the war and the signing of the Rush-Bagot Agreement of 1818, which limited the armament of Great Britain and America to one vessel on the lake of not more than "100 tones burthen and 18 pounder gun" (Johnson 1947:204; Ten Cate 1982:84; Ellis 1984:269). The village quickly returned to its sleepy pre-war state and thereafter played a limited role in lake shipping and industry. In 1829, Basil Hall (356) remarked, "The town of Sacketts has a stand-still look about it, which leads one to suspect that, as its rise was certainly owing to the War, its fall is traceable to the judicious article of the treaty of Ghent [Rush-Bagot Agreement]…"

In addition to the limitation of warships on the lakes, the end of the War of 1812 precipitated a number of changes in the Great Lakes region, not least of which was the precipitous decline of the Native American population (Milbert 1968[1828]:102). As European Americans and Canadians immigrated farther west, the pressure forced most Native Americans to assimilate or move to more remote locations. Peace also caused a shift in the fur trade. The Montreal traders, who had dominated the early fur trade, were thrown into financial difficulties because they were now cut off from the trapping grounds south of the U.S. border. Many of the merchants joined with the Hudson Bay Company and the fur export routes shifted to the Hudson Bay rather than through the Great Lakes and Ottawa River (Barry 1996:33,37). The Provincial Marine was also disbanded during the war and replaced by the Royal Navy. This allowed Britain a firmer grasp on the important inland waterways but also led to many Marine captains leaving for commercial vessels. Finally, the vulnerability of their extended border with the U.S. and the fact that the sole route to the East, the St. Lawrence River, ran along this border was impressed upon the Canadians (Richardson 1916:15). As discussed below, this realization led to several improvement projects to protect and solidify this border and connection.

The 19th Century: Lake Ontario’s Golden Age of Commerce

Political Development, Financial Fortunes, and International Agreements

After the War of 1812, the rest of the 19th century went on to become a time of unprecedented growth on the Great Lakes. The population of Ontario bloomed from between 6,000 and 7,000 at the end of the 18th century to over two million by the late 19th century, with similar expansion in northern and western New York and an associated expansion in trade and commerce. The 1840 Act of Union and 1867 British North America Act (Canadian Confederation and Dominion of Canada) established the modern Canadian boundaries and administration in response to this growing population and outside pressure (Mika and Mika 1985:248,253; Barry 1996:100).

However, this was also a period of unrest. During the 1830s, members of the Patriot movement, also known as Hunter Patriots because they organized themselves in Hunter Lodges, took it upon themselves to help the Canadians to throw off what they considered the yoke of imperialist Britain. They took advantage of unrest in Upper Canada (1837 Upper Canada Rebellion) leading up to the Act of Union and attempted to incite a rebellion. Ultimately, the movement fell to pieces after the Battle of Windmill Point (1838), where many Patriots and rebel Canadians were taken prisoner (Ten Cate 1982:82-91). The country also suffered an attack by the Irish liberation organization known as the Fenian Brotherhood in 1866, which in part led to the Dominion of Canada (Barry 1996:100). Both of these attacks involved Americans crossing the international border near Lake Ontario: the Hunter Patriots at the St. Lawrence River and the Fenians at the Niagara River. America was also involved in three wars during this time: The Mexican-American War (1846-1848), the American Civil War (1861-1865), and the Spanish-American War (1898). Each of these wars effected the region in different ways, the Civil War being the most profound as it strained relations along the border because Great Britain, and by extension Canada, favored the Confederacy (Barry 1996:79). The Mexican-American War led to several southern place names along Lake Ontario, such as Mexico Bay, and the Spanish-American War led to a brief revitalization of the Sackets Harbor area.

In addition to these wars and battles there were several financial panics that rocked the Great Lakes and North America generally during the 19th century. Commerce on the lake suffered in 1819, 1837, 1857, 1873, and 1893. The 1873 financial panic was perhaps the most pronounced for those living along Lake Ontario because it combined an economic depression with the nearly fully developed, but still somewhat novel, force of rail transport. The decline in shipping prices is evidence of the severity of this depression. Prior to 1873, owners received $0.22/bushel to ship grain from Chicago or Milwaukee to Kingston and Oswego, but in the course of a single shipping season the price fell to $0.14/bushel. Similarly, coal shipping from Oswego fell from $2.65/ton to $0.5 or $0.6/ton (Anonymous 1873, 1876; Lenihan 1987:23; Taws 1991). As one retrospective editorial, written for the *Oswego Palladium* shortly after the collapse, noted, a sailor or ship's captain could work the six-month season, with the normal risk to themselves and their ships, only to find themselves no richer at the end of the season, and occasionally poorer (Anonymous 1876).

Despite these downturns and international ill will, Canada and the U.S. passed several treaties for the benefit of Great Lakes shipping during this period. American merchants were initially granted free trade on the St. Lawrence River by the Reciprocity Treaty of 1854. This treaty was important to U.S. shippers because it gave them politically unobstructed access from the Great Lakes to the Atlantic Ocean. This reciprocity, however, was terminated in 1866 at the height of U.S.-Canadian tensions. A second treaty, signed in 1872, regained U.S. ships the right to navigate on the St. Lawrence in exchange for the Canadian right to navigate on Lake Michigan. This agreement was expanded to all of the Great Lakes and St. Lawrence waters by the Boundary Water Treaty of 1909. This treaty stated that neither the U.S. nor Canada would pass laws effecting the passage of vessels on the Great Lakes. The agreement did not, however, give up the right to place tolls on navigation, and reserved coastwise trade for ships of the home nation (Johnson 1947:205,207, 1948:113-116; Brown 1951b:103; Preston 1954:15). This legislation reconfirmed what had been true in practice for much of Great Lakes history: vessels traveling between ports, even the ports of a single nation, regularly cross the international boundary and travel a substantial distance in foreign waters, and this trade works best for both nations when it is unobstructed.

Agriculture, Land Clearing, and Domestic Growth

Throughout this period of boom and bust and varying levels of international cooperation, the Great Lakes economy continued to expand, not only in shipping, but in agriculture, timbering, mining, and internal improvements. All of these trends overlapped, with agriculture, timber, and industry feeding the lake shipping and relying on it for supplies. A recursive relationship existed between shipping and internal improvements. Nevertheless, for the sake of clarity, these themes will be discussed separately but with special attention to the places where they dovetail.

Fenced fields and orchards were beginning to appear through out the region by 1810, and there were settled areas on the Niagara Peninsula and along the Bay of Quinte. However, standing on the Niagara Escarpment in1810, overlooking one of the most heavily settled portions of the Lake Ontario shore, future governor of New York DeWitt Clinton described a “sublime view of immense forest towards the lake, like one prodigious carpet of green and a distant glimpse of the great expanse of waters” (Cain [1985]:6-7). With the attention that the War of 1812 attracted to Lake Ontario, and with property selling for $0.5 to $4.25 less per acre than in New England states such as Vermont, lands in northern New York and Ontario began to fill up quickly (Mills 1972:8-9; Holtham 2000 [1831]:127; Clarke 2001:444).

Often the first people to take up residence in undeveloped portions of the shore were part of a highly transitory population. Many of them occupied a piece of land, built a small house (approximately 6 x 2.4 m), and cleared the immediately surrounding land to plant corn, peas, and potatoes. They sold most of these products, as well as lumber, potash, and fish to merchants for dry goods, merchandise, and groceries. However, many did not stay on a lot long enough to develop a proper farm; rather, they lived on the land long enough to acquire the title, and then sold it at a profit before moving to the next plot. These individuals and their families were professional pioneers and as a result were perpetually transient (Mills 1972:12; Bedford 1998:68; Wood 2000:43). By the late 1820s, only half of the families present in any given Ontario township following the War of 1812 were still present in that township (Wood 2000:27). Clearly, these were people in search of Davy Crocket’s “elbow room,” and they left a noticeable impression on the shore and hinterland landscape. These were the land butchers mentioned above. They cleared approximately 1.5 acres (0.6 hectare) per man per year and seem to have been constantly involved in land clearing, or at least tree removal, as stumps were left in the ground and limbs were often piled up but not disposed of (Meinig 1966b:165-166; Jackson 1994; Wood 2000:85). As David Wood (2000:9) has expressed:

> The general ethos in rural North America was anti-nature... So immigrant and native-born alike set to engineering an ecological revolution, in which the most essential weapon was the axe…It became widely accepted by residents of early Ontario that it was within one's rights to deal roughly with the natural environment. There was little sensitivity to the often unique species in the woodland cornucopia or to the originally abundant wildlife.

Many of these early settlers even preferred to clear their own land, avoiding areas that had been systematically burned by Native Americans to create open plains in the forest because the settlers considered these areas to be sterile (Wood 2000:13,85). The relatively low acreage cleared by each individual annually, when compared to the size of most tracts of land sold and granted, also give an impression of the number of settlers and amount of work that poured into the region during this period. As these settlers progressed across the region, removing indigenous species, the pioneers replaced them with imported crops, flowers, and groundcover. In this way they slowly remade the indigenous landscape into one recognizable as civilized by Europeans and opened the region for the second wave of settlers.

These secondary settlers often occupied property previously cleared by the professional pioneers. While they tended to build larger homes (6 x 5 m), occasionally with frame construction near the lakeshore and other areas where saw mills were available, they continued many of the practices of the initial settlers. Their sphere of life was nearly as small, with 7 or 8 km being their functional world (Mills 1972:13; Wood 2000:99,148; Clarke 2001:445). These farmers also continued to focus on diffuse agriculture rather than focusing their efforts on smaller more efficient plots to produce their wheat, potatoes, corn, and peas (Mills 1972:13).

The third form of settlement was a mixture of in situ growth and the influx of outsiders to recently established agricultural communities. These settlers built permanent frame, brick, or stone houses, in a wide variety of shapes but generally in the vicinity of 110 m^2 (Mills 1972:15-17). These settlers also tended to be more focused in their agricultural efforts as land became increasingly expensive and scarce. These more permanent settlers also brought more stable sex and demographic ratios to the area by the 1830s. From this period on, aside from exceptional locations such as industrial centers or major immigration areas, the population tended to grow more slowly and generally spread into the uplands, with the densest population still along the shore (Wood 2000:27-28,31-32,34-35).

This constant clearing and agriculture had a marked effect on the landscape. In less than a century Ontario was transformed from woodland to farmland. Nearly 30% of the woodland in Ontario south of the Canadian Shield was cleared by 1850 and some areas were 90% denuded by the end of the 19th century (Wood 2000:xviii,22,158). Much of this clearing was earliest and most heavy along Lake Ontario where the densest population was situated.

Into these cleared areas the settlers inserted a wide range of cultivated crops. Following the initial subsistence crops of corn, peas, and potatoes, wheat came to dominate the region. However, as farmers adapted to specific climates and soils, and as diseases and pests ravaged the wheat fields, they began to shift to other grains. The eastern portion of the north shore focused on oats, rye, and potatoes, while Jefferson County, NY specialized first in winter wheat and then barley, while continuing to produce oats, corn, rye, and peas. Dairying also developed along the southeastern shore of the lake, and fruit orchards stretched from Oswego to the Niagara (French 1860; Van 1929; Meinig 1966b:166, 1966a:177; Wood 2000:98-99).

The agricultural production of the region peaked in the early 1880s, shortly before the peak in lake shipping, but the decline was significantly less precipitous in Ontario than in New York (Lenihan 1987:23; White and Montgomery 1994:43). The differential decline of these two areas is indicative of the fundamental dissimilarity between the U.S. and Canadian shore of Lake Ontario that took root during the 19th century. Historically, the Great Lakes Basin developed as the heart of the Canadian nation, while it was more a frontier to the U.S. population. As the most southerly Midwestern portion of Canada, southern Ontario, especially the Niagara Peninsula, was forced into the role of corn belt for the nation. These resources attracted a denser population than settled on the U.S. shore immediately to the south, and, by the mid-20th century, 1/3 of the Canadian population lived in the Great Lakes Basin as compared to 1/10 of the U.S. population (Clark and Officer 1962:142,146-147). For much of the Lake Ontario region, agriculture had effects beyond land clearing and population dynamics. It also drove the construction of railways because major producers needed a means to bring their goods to market. Railways in turn drove the formation and survival of towns and cities.

Towns and villages were present on the Lake Ontario littoral before the War of 1812, but most of these were centered on forts (e.g. Niagara) or major transportation nodes (e.g. Oswego and Kingston). Some of these sites received a boost in infrastructure and population due to the War of 1812 that lingered well into the 19th century, however this period also saw the diffusion of smaller towns all along the lakeshore. Most of these villages were established as support centers for the surrounding agricultural community. They generally formed around some necessity such as a mill, blacksmith, or, along the shore, convenient harbor. Eventually, other services developed as a critical mass of residents was achieved and roads were built to connect one village to the adjacent settlements (Wood 2000:7). Thus many of the villages and towns along the shore sprang up in the same locations where Native Americans had portages and the French established trading posts, because these regions were naturally suited for the interdigitation of land and water transport. During the first quarter of the 19th century, the majority of these villages were along the eastern portion of the north shore because this portion of the littoral had a longer period of development. In the following decades, the distribution of villages with their associated societies, lodges, doctors, temperance societies, post offices, and industries expanded along the shore. These remained densest along the north shore (Wood 2000:53,81). The south shore developed somewhat differently due to the substantially fewer natural harbors on the New York shore and the irresistible pull of the Erie Canal, which focused much of the development in western New York along the canal beginning in 1825.

Despite this development of urban centers, even the more densely populated Ontario shore had only three centers that could be considered towns or cities in 1848: Toronto (population 23,503), Hamilton (population 9889), and Kingston (population 8416). Clearly, the region remained rural and agriculturally based. However, farmers were not well represented in the Ontario legislature leading to friction between the urban and rural populations, which was one of the causes of the 1837 Upper Canada Rebellion (Wood 2000:4,51,53,139). This chafing between rural and urban was partly ameliorated by the 1840 Act of Union but also by the shift from rural to urban growth that began in the 1840s. During this decade, young men and, more often, young women moved to urban centers looking for employment in increasingly industrialized trades (Wood 2000:43-45). A similar trend was sweeping New England and portions of New York at the same time. With this drastic increase in urban growth came increased participation in province-wide society as well as improved institutions. The invention of the telegraph, paired with improved roads and steam transportation, allowed Ontarians to travel more widely and to be aware of national and international politics. In approximately three decades the sphere of life for most residents of the north shore had expanded from 7 or 8 km to several hundred kilometers. At the same time, this increased awareness, combined with the upheavals of 1837 and 1838 and the availability of new technology, allowed Ontario to move forward as a population. This was the period when the Geological Survey (1842), Toronto Meteorological Observatory (1839), provincial legislation for the poor (House of Industry Act 1837), Lunatic Asylum of Upper Canada (1841), and basic education system (Common school Acts 1841 and 1843) were established.

Portions of the New York shore lagged approximately a decade behind their Canadian neighbors, while others never developed beyond mid-19th century agriculture and simply declined as the demand for their produce waned (Wellman 1988:20). Towns such as Oswego did keep pace with Canadian development. The region in general, however, began to develop industry as towns grew and the towns, in turn, burgeoned as industry became more established.

Industrial Production

Much of the industry along the Lake Ontario shore and the streams leading to it was dedicated to processing local produce and materials or to supporting agriculture during the 19th century. Thus flour and saw milling, as well as textiles, brewing, distilling, quarrying, brick making, and blacksmithing, prospered. However, this production did become centralized through time. For example, flour milling shifted from small mills on nearly every stream servicing the local community to nodes situated strategically within national transportation patterns. These locations, Rochester, Oswego, Ogdensburg, Albany, New York City, Kingston, and Montreal, gathered the grain of the region and processed it in large-scale mills (NYSOPRHP site number 11714.000022; Meinig 1966b:168; Wood 2000:101,111).

Foundries also developed near Lake Ontario following the War of 1812 and expanded rapidly so that there were several in the region by mid-century. However, like flour mills, these tended to cluster near major urban centers. The centralization of mills and foundries during the mid-19th century helped drive the population shift towards towns, which provided labor and demand for a wider range of products. As a result, by the 1840s other industrial production was taking root, including pottery, carriage making, tool manufacturing, and agricultural machinery production (White and Montgomery 1994:21; Wood 2000:110-111). Much of this development was on the Canadian side, but Rochester had significant industrial facilities and there were several iron furnaces in Jefferson County and northern New York by 1850 (NYSOPRHP site number 11714.000022; Lamb 1956a:19). Drawn to southern Ontario by industrial and commercial development, the founding of the Toronto Stock Exchange and Bank of Toronto in the 1850s and the Canadian Bank of Commerce in 1867 (White and Montgomery 1994:22) also bolstered progress in the region by providing ready credit and connections for the expanding industries. By the early 20th century industry had replaced agriculture as the dominant force along the north shore, while agricultural fields broken by a few industrial centers was still the norm on the south.

The Timber Industry

Developing parallel to agriculture and simultaneously feeding the development of industry was timbering. Timber was one of the first natural commodities harvested along the Lake Ontario littoral. Uncontrolled settlement, the St. Lawrence River as a highway, and Montreal as a market led to widespread exploitation by squatters in the years leading up to and immediately following the War of 1812. Even legitimate settlers who filled the area during the first quarter of the 19th century took advantage on an individual basis of the forests that dominated their property. They not only produced potash from the trees burned to clear fields but also shipped roughly squared trunks, known as sticks, down the St. Lawrence River, and consumed a good deal of wood in construction and food preparation (Cook 1932:13,109; Wood 2000). In general, potash, and likely timber, was exported less by individual farmers and more by local merchants. Merchants aggregated the potash of individual farmers, exchanging it for tea, coffee, tobacco, or credit at their store, and then shipped it to Montreal in bulk (Bedford 1998:68). This arrangement was more efficient and protected the farmers from much of the risk of shipping on the St. Lawrence River, but also likely allowed the merchants to better control the price of potash.

The Royal Navy too had an early interest in pine timber from the region to fulfill their spar and mast needs, although they were also interested in oak. This trade began in the 18th century and remained strong through the 1840s. In theory, the Royal Navy not only claimed and took timber but also set aside reserves to assure that the supply was not exhausted. However, this policy was not well observed in Canada and the reserves were not maintained (Richardson 1944:33,36).

Both mast pine and oak exportation received a boost in 1804 due to a shortage of oak in Britain followed by the exclusion of Britain from the Baltic timber supply by the Napoleonic Wars. Much of this shortage was filled by timber from the St. Lawrence River and Lake Ontario region floated down river to Quebec for export. In 1811, between 500 and 600 ships departed Quebec for England carrying timber. Realizing the financial gift they had been given by the disruption of Baltic trade, timber exporters in

Quebec lobbied for a levy on Baltic timber, thereby ensuring a continued market for their North American product (Calvin 1945:4-5; Wilson 1989:Box 17, Folder 12). The squared timber trade grew from this advantage, challenging the fur trade in exports by the 1820s and dominating much of the frontier from the 1830s through the 1880s. Forest products were the most important component of Ontario's export trade through the middle of the 19th century, with this industry providing employment for many and greatly altering the landscape (Richardson 1944:38; Lamb 1956a:16; Wilson 1989:Box 17, Folder 12; Wood 2000:7).

The timber industry on Lake Ontario and the Great Lakes in general was split between local production of sawn timber and export timber. Lumber mills tended to be established near settlements and provided construction materials for local consumption as well as export. Their number expanded by the 1840s so that by 1855 there was one mill for every 700 people in New York and one for every 608 people in Ontario (Wood 2000:6,102,106). Similar to the initial flour mills, these lumber mills proliferated on the numerous streams that flow towards Lake Ontario. Both types of mills often occupied the same water rights and were central to the formation of villages and towns near the lakeshore.

The majority of the timbering, however, focused on squared timber for export and took place in remote locations on the frontier, away from settled agricultural communities. The early timber trade did not require established harbors. A vessel anchored offshore and timber was floated out. Staves for barrel making, an important sister-product to the squared timber, were also brought out to these vessels by scow. The timber vessel then carried the wood to Cape Vincent, Carleton Island, Clayton, New York, or Garden Island, Ontario where it was formed into rafts for transport to Montreal and Quebec (Van Cleve 1877:100; Wilson 1989:Box 17, Folder 12; Wood 2000:103). Thus timber harvested in remote locations was brought to urban centers to be aggregated, formed into rafts, and floated down the St. Lawrence River. This arrangement allowed timber rafting companies to draw on the urban populations for workers and permitted timber merchants to engage in other trades and remain in easy contact with buyers down river. For example, many of the timber merchants on Lake Ontario and the upper St. Lawrence River were also major shipbuilders, using the ships they built in the timber trade as well as selling them to merchants in other trades.

Timber rafting, however, remained the primary focus of most of these individuals and their companies, the most important of which were centered at Clayton and Garden Island. Timber rafting was taking place at Clayton prior to the War of 1812, but the war disrupted this industry and it was not until 1828 that rafting was again a large-scale endeavor at that town. Rafting at Garden Island began slightly later, ca. 1844 (Calvin 1945:10; Wahl 1974). Both of these rafting nodes, centered around timber merchant Delano Dexter Calvin at Garden Island and variations of the firm of Smith and Merrick at Clayton, drew first from Lake Ontario timber and then from an expanding sphere; by the 1860s they were bringing in oak from Ohio (Calvin 1945:46,49; Brown 1951a; Wahl 1974; Ten Cate 1982:66-67; Holtham 2000 [1831]:128).

Once the individual sticks were offloaded at the rafting center, they were assembled into drams 300 feet (91.5 m) long and 60 feet (18.3 m) wide. Dense woods, such as oak, were stacked only one stick deep and mixed with enough pine to keep them buoyant, while less dense woods could be stacked three tiers high to maximize the amount of timber transported. The dram was held together by a framework called a “crib” and birch sapling withies (Calvin 1945:63-68; Ten Cate 1982:68). A cabin was constructed on each dram and the drams were assembled into rafts measuring up to 1400 feet (426.8 m) long and 120 feet (36.6 m) wide, which were outfitted with sweeps, anchors, masts, and sails. The rafts were then propelled down the St. Lawrence by the current, wind, sweeps, and, after mid-century, shallow draft side-wheel steamboats. At the more dangerous rapids, the raft was broken up and the drams shot the rapids individually, but otherwise the entire mass traveled together. Once they reached Montreal, the crew returned by ship through the Rideau Canal, bringing the tackle and equipment to be reused on the next run (Ten Cate 1982:68; Dickens 1987 [1842]:208; Barry 1996:62,68; Moore 1996b:8). The majority of the timber sent through Lake Ontario and down the St. Lawrence River in this way was pine, especially between 1845 and 1897 (Calvin 1945:138; Wilson 1989:Box 17, Folder 12; Bazzill 2007:15). Large logs, both pine and oak, were lost from these rafts and still litter the bottom of the lake and river. There is currently a profitable trade in recovering them for sale.

The rafts were not simply floating stacks of timber; they also carried flour, peas, and other products down the St. Lawrence, partly fulfilling the later roles of the railroads and canals by connecting Lake Ontario directly with Montreal. They were also what Charles Dickens described as a "nautical street" with a surprising amount of cabins, shanties, and domesticity arranged on their surface (Calvin 1945:24; Fleming 1956:303). A substantial number of French Canadians and Native Americans populated these floating streets. Nearly all of the timber foremen and many of the crew were of French descent and lived in Pittsburgh Township and on Howe, Garden, and Wolfe islands, in order to be close to the permanent timbering establishments. The Native American crew members were often brought in from surrounding communities and reservations to serve on individual runs (Calvin 1945:77; Mills 1972:63,70).

Timber rafting was unique in Great Lakes commerce in that it did not initially face competition from technological change in the form of ships or trains. Rafting was simply the cheapest and most efficient way to move timber from Lake Ontario to Montreal and Quebec (Calvin 1945:64). As a result of this fact, as well as the opening of the Welland Canal permitting timber to be brought in from the Upper Lakes, and because of a building boom in the U.S., the timber trade flourished throughout the mid-19th century. However, between 1868 and the 1880s, large fires around the Great Lakes, the result of waste timber and cut-over lands, destroyed portions of the remaining timber stock. The Quebec timber market also collapsed in 1873, signaling the decline of Great Lakes timbering. By 1885, timber sources had been cut far enough back from the lakeshores and rivers that, combined with decreasing rail costs, it was cheaper to export timber by train. The size of available timber was also declining during this period. Records from the Calvin company show that the average stick of oak was 84 ft^3 (2.4 m^3) in 1857 and only 60 ft^3 (1.7 m^3) in 1907. With the addition of the McKinley Tariff (1890) to this combination of circumstances, the Great Lakes timber industry could not recover and by 1900 the major timber center had shifted to West Virginia, Kentucky, and Tennessee (Richardson 1944:18; Calvin 1945:35-36,48; Wilson 1989:Box 17, Folder 12; Taws 1991; White and Montgomery 1994:45).

The industry left on the landscape very noticeable marks that persist long after its decline. In addition to removing trees, which changed the very appearance of the region and led to increased stream temperatures and soil erosion, timbering also damaged stream banks and dammed or diverted streams (Crowder et al. 1996:129; Wood 2000:12, 16). All of these changed the landscape in unprecedented ways; due to the rapid deforestation of the region, there was little time for the ecosystem to reestablish equilibrium.

Lake Commerce and Shipbuilding, 1815-1900

The War of 1812 hurt lake shipping, but shipping on Lake Ontario regained a footing and boomed before declining, all during the 19th century. At the end of the war there were relatively few vessels on the lake but the sale by the U.S. Navy and reuse by local merchants of *Madison*, *Oneida*, *Lady of the Lake*, and *Sylph* helped to bolster the merchant fleet (Van Cleve 1877:100; Horsey 1942:7). The lake trade was also helped by the quick reconnection of U.S. and Canadian markets following the war and the establishment of regular trade routes that could be counted on to deliver goods between ports. For example, an advertisement in the *Geneva Gazette* announced forwarding service to Kingston and Montreal as early as April 1815, essentially the first available instant after the establishment of peace and the end of the winter freeze, and another advertisement in the same paper promised regular once-weekly voyages from Sodus Bay to Kingston, Ogdensburg, and Montreal (Ledyard 1815; Edwards 1820). By 1818, there was even a regular packet between the two formerly-opposing naval stations, Kingston and Sackets Harbor (Melish 1970 [1818]:539) That year the American commercial fleet on Lake Ontario was approximately 60 vessels with an aggregate tonnage of 3,000 and most vessels ranging between 25 and 75 tons, which were involved in carrying a wide range of produce and merchandise. Planks, pears, passengers, apples, hay, potatoes, corn, gin, cider, onions, ceramics, glass, iron, textiles, salt, salt beef, salt pork, flour, furs, whiskey, potash, staves, wine, tea, ship's chandlery, seeds, trees, and sugar were all moved across Lake Ontario during the first two decades of the 19th century. Most of the finished items on that list originated at eastern cities and were shipped to lake ports such as Kingston, Oswego, and Troupville (Sodus Point) before being sent on to smaller ports and settlements. The process also worked in reverse, with much of the produce, whiskey, and potash traveling down the rivers in Durham boats from the hinterlands and along the lakeshore to the lake ports to be shipped east (Anonymous 1816b, 1818; Wilson 1824:52; Van Cleve 1877:102; Calvin 1945:111; Melish 1970 [1818]:500; Cain 1987:22; Bedford 1998:44). An article in the *Oswego Palladium* in February 1820 estimated the average value of cargo carried by ships leaving that port at $3,000 per voyage and stated that each vessel made approximately 20 voyages per season. The author did not estimate a value for return freight because, while it did occur, most vessels returned in ballast (Anonymous 1820). Assuming the 60-vessel American fleet of 1818 as estimated by Van Cleve (1877:102) as a minimum, American lake commerce was approximately $3.6 million in 1820. The figures for Canadian shipping may very well have doubled this value.

As trade increased during the early 19th century, so did the shipbuilding industry. After the War of 1812, shipbuilding decentralized away from the naval dockyards. There was also a transition away from older ship types towards distinctive lake vessels. Through the late-18th century, the majority of the Great Lake shipbuilders were trained in naval yards and the naval influence persisted into the early 19th century. However, most of these shipbuilders quickly realized that ocean-going vessels were too deep for the lakes and transitioned to lighter, shallower vessels (Martin 1993:23). The benefits of fore-and-aft rigs were also noted as early as 1788. By the War of 1812, schooners were the dominant vessel type on Lake Ontario, and by 1830 they far outnumbered all other vessels (Ericson 1969a:99; van Gemert 1972:287,291-292; Brown 1988:51). Schooners had four primary advantages. First, the maneuverability afforded by a schooner was important because the lakes are confined spaces filled with hazards that limit the ability of a pilot to tack out of harm's way. The lakes also have predominantly westerly winds, aiding vessels in one leg of their journey but not the return. Second, schooners were easier to work upwind than square-rigged vessels. Third, they could also be worked from the deck by relatively few men. Finally, lake schooners were built with very shallow drafts, allowing them to skirt shoals and operate in unimproved harbors, bringing commerce throughout the Great Lakes. While other rigs that combined fore-and-aft and square sails, including brigantines and barkentines, existed on the lakes since the time of European settlement, schooners dominated the 19th century and in the coming decades became highly refined vessels.

With increased settlement and tranquility along the border, commercial shipping on Lake Ontario flourished and the lake entered its golden age of sailing commerce (ca. 1830–1870). Much of the early trade on Lake Ontario was of the intra-lake variety. However, John Melish's (1970 [1818]:513) belief that "the principal market is on the lake, and it is believed by the people here that it will always continue to be so…" proved to be short sighted, as Great Lakes trade quickly drew materials from throughout the region and served markets as far away as South America and Europe. The size of the lake fleet tended to increase throughout the century, although it did wax and wane with international (e.g. Crimean War), national (e.g. economic boom-bust cycle), and local (e.g. over-building ships during early 1840s) circumstances (Weightman 1994:17). A few examples and statistics can illustrate the expansion of Great Lakes trade. In 1830, the total tonnage on the lakes was 7,728, but by 1860 this number had grown to 450,726 tons (Francis 1986:262). Similarly, in 1841, the gross Great Lakes trade was estimated at $65 million, which had grown to over $300 million within a decade (Barry 1996:55). After the close of the Civil War, when America's ocean fleet was in decline, the Great Lakes fleet continued to expand for nearly three decades. Laws and geography protected it from foreign competition, and booms in the grain, lumber, iron, and passenger markets provided additional benefit. By 1871, the 13 U.S. custom districts surrounding the Great Lakes (of the 95 total in the country) accounted for 49.4% of the total tonnage and 64.8% of the total voyages; the tonnage percentage remained high into the 20th century and was 31% in 1902. Even more striking, most of the ports involved in Great Lakes trade did not exist 50 years prior to the Civil War (Marvin 1902:395; Jensen 1997:49-50). By 1910, the Great Lakes fleet was larger than the ocean fleet of any country except Britain or Germany (Barry 1996:145).

However, Lake Ontario did not benefit as much from this massive expansion as the rest of the Great Lakes. As Arthur Pound states in his history of the lake, "Lake Ontario… is commercially the poor relation of the other Great Lakes. Not possessing the tremendous natural resources of the Lake Superior country or of the Erie coal fields or even the oil of the Michigan district..." (1945:326). Just as the Great Lakes drain the waters of the Old Northwest Territory, they also drained the raw material resources of the region; the larger the watershed, the more important the lake was to commerce. Lake Erie drains its own region and also siphons water from the other Great Lakes, making it of paramount importance. Lake Ontario, by contrast, is restricted by the cataracts and falls of the Niagara River and the constriction of the Welland Canal. It drained resources only from its immediate area and from what could pass through the canal. Consequently, Lake Ontario did not experience the same volume of trade as the other Great Lakes during the 19th century, but it did continue to be commercially active and did participate in most of the major lake trades.

The Great Lakes connected the East and the West, with the West feeding the East and the East supplying manufactured goods in return; however, the number of products moving through the lakes tended to decrease during the 19th century as the importance of bulk commodities increased. By 1900, three-fourths of the lake trade was in bulk commodities (Marvin 1902:402-403; Lenihan 1987:37). Coal was the principal westward bulk cargo; meanwhile, the West supplied grains and other foods, in addition to lumber and ore. This trade in raw materials with the East allowed the Midwest to develop regional specialization in specific materials, leading to growth of regional centers and international trade (Marvin 1902:403; Odle 1952:178; Laurent 1983:1; Francis 1986:261).

One of the early centers of commodity specialization on Lake Ontario was the salt market at Oswego. Salt from the Salina region of New York was shipped west from Lake Ontario until the 1870s when salt fields were discovered farther west. Oswego was the principal port on Lake Ontario during much of the 19th century, although, despite being connected to the Erie Canal by the Oswego Canal in 1838, it eventually ceded dominance to Rochester (Van Cleve 1877:96; Cooper 1905 [1809]; Pound 1945:249; Brown 1951a:30; Monk 2003:16).

Grains were the largest single eastbound commodity on the Great Lakes during the 19th century, replacing timber in the 1850s (Gilmore 1957b:97; Wood 2000:96,102; Holtham 2000 [1831]:127). Initially grains were exported as beer and whiskey and later in their natural and milled states. Through the 1830s, whiskey rivaled lumber as the primary export from Lake Ontario; however, by the 1840s, whiskey began to fall off and was replaced by flour and grain export (Richardson 1944). The raw commodity remained the same but this transition in processing technology was likely associated with the increasing presence of flour mills at this time. While the land bordering Lake Ontario produced substantial amounts of grains, the Midwest dominated the trade, shipping through the Erie Canal and Lake Ontario to the East Coast. The export of Midwest grains began with Ohio in 1835, and as settlement spread farther west other states began to export as well, so that by the close of the Civil War, Ohio, Illinois, Indiana, and Wisconsin were all exporting grains (Francis 1986:262; Barry 1996:53). The establishment of the Chicago Board of Trade in 1848 served to stabilize the market by bringing supply and demand together. Similar organizations were established in Canada at Port Arthur (1855) and Fort William (1879). The trade was also facilitated by the construction of canals in Ohio, Indiana, and Illinois, beginning in 1833. The canals served to draw produce from the hinterlands of these states to the lakes and away from the Mississippi River, which had previously been the primary outlet for the interior (Odle 1951:239,244; Monk 2003:12). The grain trade focused on wheat, with corn becoming a major component after 1845 and oats contributing significantly after 1850. Barley and rye were also shipped on the lakes, but were a substantial part of the grain trade only on Lake Ontario. Wheat was either processed and shipped as flour in barrels or shipped as bulk wheat in bushels to be processed in the large New York mills. After 1850 the majority of wheat was shipped as bulk (Odle 1951:239-241).

Despite operating on the same bodies of water, the American and Canadian grain trades remained largely distinct. As foreigners, the Canadians were barred from the American trade by protective tariffs. One exception to this rule was during the Crimean War (1853-1856), when the price for wheat rose high enough ($3/bushel in Europe) that it was lucrative for Americans to transport grain from Toronto to Lewiston and then on to New York by rail for shipment to Europe. Furthermore, the Canadian grain market was largely controlled by Montreal merchants who shipped grain to Kingston and then brought it to Montreal through the Rideau Canal. Their market generally consisted of Great Britain and her American possessions. If demand outstripped supply, Montreal merchants bought American grain with nominal import duties. During the 20th century, Canadian grain was also sold at Toronto, or, after 1930, was transshipped at Port Colborne and Prescott to eventually be sent to Europe (Pound 1945:323,328; Odle 1951:242; Gilmore 1957b:97; OCMA 1985b). As the primary commercial cargo on the lakes, grain was largely responsible for much of the increase in size and efficiency of Great Lakes ships, the introduction of iron and steel hulls, and, ultimately, the transition from sail to steam (Barry 1996:107).

During the height of the grain trade, Buffalo was the principal grain port on the Great Lakes. From there the grain was loaded into canal boats or, later, railcars for shipment east. Efficiency at Buffalo was so great that many grain elevators offloaded directly into canal boats. Oswego, the principal port on Lake Ontario, is often listed as a major mid-century grain depot, but because of the ease of the Erie Canal and the restrictions of the Welland Canal, the Oswego market was half the size of that in Buffalo and fifth overall among Great Lakes ports, behind Buffalo, Chicago, Cleveland, and Detroit. However, in 1861 Oswego also moved 18.6 times more cargo than the next largest Lake Ontario port, Genesee (Rochester and its lake port Charlotte), so its effects on the local economy should not be underestimated. Oswego, like Buffalo, had a Board of Trade, organized in 1849, that regulated the grain market and allowed Oswego merchants to act as middlemen for buyers in Albany, New York City, Philadelphia, and Baltimore (Disturnell 1863:31; Odle 1951:243, 1952:191, 1953b:52-53, 1953c:162-163; Barry 1996:116). By 1867, the power of the merchants in Buffalo and Oswego was greatly reduced because western merchants could communicate directly with the East by telegraph. The heyday of the grain trade on the lakes was over by 1873 because the centers of production had moved farther west and railroads rather than ships were being employed to carry the grains (Odle 1953a:259; Barry 1996:107).

With the decline of wheat shipment, barley was one of the few commodities being exported from Canada in vast quantities, and Oswego was the major U.S. port of entry. The barley trade began during the Civil War and ended abruptly with the passing of the McKinley Tariff in 1890. The tariff raised the duty on barley from $0.10 to $0.30 and reduced the trade to nearly zero, depriving Oswego grain elevators of their principal commodity. Due to the tariff, barley importation declined precipitously until 1900, when it ceased altogether (Palmer 1986; Taws 1991). With the end of barley exportation, major barley producing regions of Ontario such as Prince Edward County were forced to realign their agricultural base to fruit trees, dairying, fishing, or subsistence farming (Burdick 1965).

Like grain, ore is a major modern Great Lakes commodity that has its roots in the 19th century (Barry 1996:227). The first modern copper mine opened on the southern shore of Lake Superior in 1844 and was followed shortly by iron mining. The first shipment of iron ore occurred in 1849. These discoveries quickly overshadowed the ore trade on Lake Ontario. Mines in the Adirondack Mountains began producing iron ore ca. 1798 and continued into the 20th century. As late as the 1870s, the regions of New York within easy distance of the St. Lawrence River and Lake Ontario were producing one-quarter of the ore mined in the U.S. However, as the western mines developed, the Adirondack mines declined (Anderson and Jones 1945; Pound 1945:331; Brown 1950a:164; Barry 1996:47,68).

Coal and oil were also major commodities on Lake Ontario during the second half of the 19th century. Oil production began in southwestern Ontario in 1850 and in Pennsylvania in 1860. The Pennsylvania oil was generally sold in domestic markets while the Canadian oil tended to be shipped to England (Monk 2003:15, 77). Coal was one of the few raw materials shipped west on the Great Lakes. Mined in Pennsylvania and New York, coal was shipped to Canada through Oswego, Fair Haven, and Sodus Point, providing a boon to local economies from 1870 to 1900. By 1900 coal transshipment was in decline, and by 1930 many of the coal docks were closing (Ellis 1984:298-299; Francis 1986:261).

In addition to shipping goods to the East, Great Lakes merchants also traded directly with Europe, beginning in 1844. In that year, the *Pacific*, a Canadian brigantine loaded with flour, became the first Great Lakes vessel to travel to Europe. Other lakes vessels followed, taking advantage of poor harvests in Europe and recent improvements to the Welland and St. Lawrence canals (Brown 1951b:10; Brown 1961 [1863]:4-5,8; Richmond 1965 [1857]; Barry 1996:65). Prior to the Treaty of 1872, in which Canada granted American ships the right to navigate the St. Lawrence River in exchange for access to Lake Michigan, the trade was dominated by Canadian merchants. Additionally, the trade was initially one-sided, with North American vessels traveling to Liverpool, Greenwich, Glasgow, Cork, London, or Hamburg carrying grains and lumber. Once in England, the ship was sold along with the cargo, due to the good prices offered for vessels in Europe and for lack of a return product. The crews shipped on other vessels to return home. However, by the 1850s, vessels such as the *Madeira Pet* of Liverpool were bringing iron bars, earthenware, glass, hardware, paint, and immigrants to the Great Lakes. It eventually became common for Great Lakes vessels to make the roundtrip, leaving in October as the lake began to freeze, and returning in the spring to work on the lakes. In this way, it was possible for lake vessels to be profitable year-round (Brown 1950a:163, 1951b:101-102; Gilmore 1957a:22; Brown 1961 [1863]:4,8-9; Ellis 1984:270; Barry 1996:65,77).

All ship construction on Lake Ontario was driven by technology as well as economics. New and improved ships were constantly being introduced at such a rate that, at the beginning of the 20th century, 500-foot steel-hulled freighters and sailing cargo ships were plying the same waters. With all of these vessels, the cost of adopting new technology was weighed against the effectiveness of old technology, permitting older vessels to compete against newly-introduced types (Laurent 1983:14; Jensen 1997:57).

By 1870, the Great Lakes schooner had fully matured: these vessels were slightly longer and less beamy than ocean vessels of the same tonnage, with shallow drafts for entering unimproved harbors and flat-sided hulls. Nearly all lake vessels had centerboards, which were first introduced in 1807 and were standard by 1845 (van Gemert 1972:290; Barry 1996:119; Palmer 1999:50; Monk 2003:54). Most Great Lakes vessels were built with reducing frames to limit the weight of the hull above the waterline without significantly diminishing structural strength. Unlike ocean ships, knees were not universal on lake vessels, and were often replaced by stanchions along the centerline to support the decks. Vessels carrying extremely heavy cargos, such as ore, were often built with hold beams: transverse beams part way between the deck and the bilge that served to strengthen the sides of the vessel (Minnesota 2004). Many lake vessels combined some or all of these features and other small variations in order to be well-adapted for a specific trade. However, with the rise and fall of different commodities, most vessels carried whatever cargo was available and profitable. For example, the *Rockaway* was designed to carry lumber, but between 1866 and 1879 it carried grain, salt, produce, packaged goods, coal, iron ore, and occasionally lumber (Pott 1993:30). The differences in construction by intended trade were generally small and nearly all commercial lake vessels were efficient bulk carriers. As Henry Hall noted in 1884 (138), writing near the height of wooden sail commerce on the lakes, “the lakers are admirable vessels, and are exactly adapted to the commerce in which they are employed, being fast, great carriers, cheap, and profitable, no more can be said of any vessel.”

Many of these vessels were built specifically to fit through the Welland Canal connecting Lake Erie and Lake Ontario and will be discussed below. Others, however, were built too large to pass the canals and operated only on Lake Ontario, and many more were small, short-distance cargo vessels. Poor roads drove most merchants and travelers onto the lakes for transportation for much of the 19th century. Small vessels, generally less than 30.5 m in length, could enter any harbor bringing in goods and merchandise in exchange for raw materials or agricultural commodities. Many of these vessels operated as stores, bartering finished goods and supplies for local goods or furs. One of the most common types of small vessels on Lake Ontario, especially in the lumber, cordwood, tanbark, sand, and hay trades, and on the Bay of Quinte, was the scow schooner. Introduced circa 1830, these vessels, with their shallow, flat bottoms, hard chines, slab sides, and scow ends, were cheap and easy to produce (Lance 1987; Pott 1993; Barry 1996:120; Pott 2001).

The rigs of Lake Ontario vessels were also distinct to the Great Lakes by the 1830s. Most lake vessels combined the driving power of square sails running ahead of the predominant westerlies with the maneuverability of fore-and-aft sails for tacking back up the lake. Even the prevalent and fore-and-aft rigged schooners were commonly rigged with a raffee square topsail on the foremast. This arrangement was still manageable with a small crew and increased the speed of the vessel (Ericson 1969a:100; Brown 1988:51; Barry 1996:119). Through the 1870s, it was not uncommon to see barkentines and brigantines, shortened to “barks” and “brigs” in lake parlance, on Lake Ontario. These rigs were generally reserved for large vessels, with barkentines being the largest. There were even a few true brigs on the lakes during the first half of the 19th century, the last known example of which, the *Robert Burns*, was launched in 1848. After the 1870s the topsail schooner completely replaced these rigs and the term “bark” came to denote a large schooner carrying some square sails (Barkhausen 1947:1; Ericson 1969a:100; Lenihan 1987:45; Barry 1996:67,97,120).

The schooner began its rise to dominance of lake trade early in the 19th century and, by 1860, outnumbered all other vessels on the Great Lakes. Wintering at Detroit in

1854, for instance were 91 schooners, 20 brigs, 4, barks, 2 sloops, 6 paddle-wheel steamers, and 12 propellers, and in 1870 there were 214 barkentines, 159 brigantines, and 1,737 schooners on the Great Lakes (Anonymous 1854; Barry 1996:97). The predominance of schooners on the lakes was in character with the American merchant fleet in general, which consisted of 82% schooners, compared to 38% and 32% in Great Britain and France, respectively (Lyman 1967:241; Karamanski 2000:36). By carrying a substantial amount of sail on the jib boom and a raffee sail, schooners were able to obtain high speeds with minimal crews (approximately 4 men for a 150-ton vessel). Lake schooners had a number of characteristics that distinguished them from the salt water variants. The masts on lake schooners tended to be placed at the extremes of the vessel; this left more unobstructed cargo space and easing cargo handling, but also reduced speed. While ocean vessels spent comparatively longer time at sea where greater speed led to more voyages and profits, the several short voyages of the Great Lakes shipping season put a premium on time-efficient loading and unloading. Lake vessels also tended to carry more sail on the foremast and comparably less on the mainmast than sea vessels. The mizzen boom on lake vessels was often short, projecting just beyond the stern, likely a canal adaptation. On three-masted schooners, which were extremely popular in the later years of the century, the mizzen was invariably shorter than the forward two masts possibly to reduce hogging or to make sail handling easier (Marvin 1902:406; Barkhausen 1947:1; Brown 1988:51).

Most Great Lakes sailing vessels were worn out after 15 years of service and by 25 were completely useless (Barry 1996:149). Consequently, there was a constant demand for new vessels during the boom years of the 19th century. Between 1820 and 1860 “almost every port, river, or bay had at least one shipyard sending vessels of every description and size down the ways at a steady rate” (van Gemert 1972:292). The grain and lumber booms of the mid-1850s only increased the demand for new ships. Sailors were also in high demand during this period. In 1850, there were approximately 10,000 sailors on the Great Lakes, by 1861 the number had increased to 15,000, with an additional 6,000 working in shipyards. Many of these men were not local. By the early

1870s, fewer than half of the American sailors came from the lands around the lakes (Brown 1951a:29; Jensen 1997:53).

The increased demand for vessels also led to increased speed and efficiency in ship construction. It was common not only to finish a vessel on the stocks, but to step the masts, rig the vessel, and bend on the sails prior to launch. This technique risked the extra strain on the hull from additional weight outside of the water in order to produce a vessel that could sail immediately (Brown 1988:19,46). Most ships launched at Oswego left the ways in late April and early May so that they could undertake a full season of trade during their first year and begin to pay back the investment made in them. Winter shipbuilding also served to provide winter employment for lakemen. Simon Johnston and many other captains owned or operated shipyards in which they produced during the winter the vessels they would sail in the summer (Ten Cate 1982:122; Brown 1988:10,12,46; Palmer 1999:46).

During the first half of the 19th century, Kingston and Clayton were the dominant shipbuilding centers on Lake Ontario. Shipbuilding at Kingston extended back to the first French fort, but Clayton did not become a major node of production until Smith and Merrick, the timber exporters, established their large yard there in 1832. Clayton was a major producer of commercial vessel until ca. 1890 when the timber industry collapsed. The town produced a substantial number of large (over 60 m) and steam-powered ships (Ten Cate 1982:66; Anonymous [1970]). During the mid-century, ports along the Welland Canal also began to develop major shipbuilding industries, as did Oswego about a decade earlier. Oswego was not only a major commercial town but it also served as a principal node in westward migration, leading to increased industry during the middle years of the 1800s. Between 1845 and 1855, the town grew from 10,000 to 16,000 inhabitants and launched as many as 26 vessels in a single year. Oswego also boasted the only drydock on the U.S. shore capable of servicing schooners. However, after 1855, shipbuilding gradually declined at Oswego as Lake Ontario trade dwindled and steam began to replace sail on all the Great Lakes (Pound 1945:249; Alford 1957b:307-310; Brown 1988:69).

Harvesting the Lake: Fishing on Lake Ontario

Fishing occupied the same waters as commerce on Lake Ontario, but the two seem to have been largely distinct, with sailors only occasionally shifting between occupations. However, as much of the fishing on Lake Ontario was done from shore, it was more apt to draw on agricultural workers than mariners. In general, fisheries on Lake Ontario, similar to the other Great Lakes, were of less economic impact and employed fewer people than other major resource industries (Osborne 1990). Nevertheless, fishing did figure prominently in the local economies of areas with seasonal fish runs, and the persistent taking of fish caused historically noticeable alterations in the lake food web.

As discussed previously, Native American fishing involved fishing offshore and catching migratory fish in estuaries using a variety of technologies, including nets, weirs, traps, hooks, decoys, spears, and dip nets. However, due to the comparatively low population densities that existed prior to the late 18th century and the relatively simple technology employed, these early fisheries are generally thought to have minimally affected the types and distribution of lake species (Osborne 1990:83-84,93). There is, however, a growing international literature that suggest these assumptions need to be reconsidered (Reitz 2004; Erlandson and Fitzpatrick 2006; Rick and Erlandson 2008).

Conversely, the arrival of large numbers of Europeans, Canadians, and Americans to the lakeshore in the late 18th century had unquestionable repercussions for the local fish populations. These effects were noticeable within a decade of Loyalist settlement and resulted in early regulation of whitefish (*Coregonus clupeaformis*) seining at Niagara followed by legislation to protect salmon along the St. Lawrence River, first in Lower Canada (1789) and then in Upper Canada (1807) (Osborne 1990:84). Seining was the first widespread type of proto-commercial fishing on Lake Ontario, introduced at Niagara in the 1790s and to the lake as a whole by 1807. These nets allowed the taking of large quantities of fish without the need to invest in any vessels beyond a small boat. Initially seines were relatively small, measuring approximately 50 m long and 8 m deep by the mid-19th century. A net this size could take approximately 2,000 to 3,000 whitefish per haul and would sometimes be hauled two or three times per night for the duration of the two month fishing season (Osborne 1990:85). Clearly, the repetition of this practice year after year, taking fish during their spawning activities, could have a significant impact on the food web; furthermore, substantially larger nets were noted in the historical record (Bedford 1998:167-168). By the end of the 19th century seines were more than 1,000 m long and 6 m deep, permitting seiners to take a prodigious number of fish with each haul.

Seining tended to concentrate on smooth sandy beaches where the nets could be hauled out and in areas where fish congregated during their spawning runs. Principal among these locations on Lake Ontario was the Chaumont Bay and Black River Bay of Jefferson County, New York and the Bay of Quinte area of Prince Edward County, Ontario. Seining tended to be undertaken by farmers who took full advantage of their littoral property to supplement their agricultural income. The general method of seining for fish was to attach one end of the net to a capstan mounted on the shore. From there a small boat deployed the net in a large arc before returning the other end to the same capstan. Sinkers on the bottom and floats on the top of the net insured that it was positioned properly in the water column. Once deployed, the net was wound back to shore with the capstan. Often the farmer who owned the shore property also owned the nets and hired his neighbors during the fishing season for either a percentage of the profit or a wage. In mid-century Prince Edward County, 500 people were involved in seining during the peak season. Occasionally, the seining season had a negative influence on local agriculture because it drew laborers away from the job market and inflated wages so that crops suffered for the short-term gains of fishing (Hough 1854:106,206; Osborne 1990:85-86; Bedford 1998:167-168,204).

Gill netting was introduced to Lake Ontario in the 1830s as an alternative in areas where the shore was unsuited for seine fishing. However, this form of fishing was primarily boat-based and led to the development of the Huron model vessel, schooner-rigged with plenty of open deck space for handling nets and fish. Similar to seine fishing, the gill nets grew in size from 503 m in the mid-19th century to 1,829 m by the end of the century. Gill netting had a longer season than seining because it allowed for deep-water fishing. It eventually replaced seining and became a full-time profession (Osborne 1990:88-89).

By the late 19th century, whitefish were in such great demand in the U.S. that almost all of the eastern Lake Ontario catch was directed at U.S. markets. The demand was so great that it was economically sensible for Kingston fishermen to export their catches to the U.S. and allow local demand to be met by fish brought in from Georgian Bay. The advent of fast and regular transportation by train allowed fish to be exported farther and eastern Lake Ontario ports shipped substantial numbers of barrels to the East (Osborne 1990:86,89). Eventually the over-fishing, silt from land clearing, sawdust and other pollutants from mills, and dams and mills that interrupted spawning runs led to a decline in the economic fish populations. The resulting lower yields led to Fishery Acts in 1857, 1865, and 1885. However, by this time the major fishing fleets had moved west and north with the transportation network and fishing on Lake Ontario was waning (Osborne 1990:81-82,87,89; Wood 2000:17).

In addition to leaving a mark on the ecology of Lake Ontario, the fishing industry contributed to the historic landscape of the shore. Clusters of net dryers, ice houses, net sheds, wharves, and fishing shanties remain visible in some locations. Other portions of the fishing landscape such as fishing grounds, lay-overs, and zones that were formerly the domains of specific families or firms are harder to identify archaeologically but still exist in the minds of an ever-diminishing few (Osborne 1990:91).

Westward Expansion

The shift of the fishing fleets to the west was indicative of the larger westward expansion of Canada and the U.S. during the 19th century. Lake Ontario played a part in, and was a victim of, this expansion, with the center of commerce moving first along the lake and then on to the Upper Lakes. Within Lake Ontario, the early ports were along the eastern margin of the lake with a single western node at Niagara for the first two decades of the 19th century, but within 40 years the focus of commerce had shifted west and then off the lake entirely. Toronto is a good example of how fast this transition occurred. In 1779 there was no white settlement at Toronto; the town, first called York, was not established until 1793. Six years later there were only 224 residents of the village. However, commerce and settlement had shifted far enough west by 1834 to name Toronto the capital and by ca. 1840 the town was a force in lake commerce (Pound 1945:303-304; Thayer 1953:288; White and Montgomery 1994:36-37,39). Toronto rose to prominence in part because it successfully combined land and lake steam transportation, forming a good terminus for rail transfers to steamships. The date of its rise is also significant, occurring just as urban settlement and industry became significant forces along the lake margin. The forces of industry and rail, along with the benefits of the political seat, allowed Toronto to grow and prosper, while continued westward movement caused much of the maritime trade on Lake Ontario to decline.

The expansion across the Great Lakes was not a simple vector of society; rather, it was made up of individuals making choices that best addressed their current needs. While there were some pioneers who continued to move across the region always in a westward direction, many moved across the frontier with no clear pattern. These individuals moved west and east as employment or other need took them (Wood 2000:42). In this way westward movement resembled the territory expansion of hunter-gatherers (Kelly 2007:111-161). Individuals and families shifted around within a range without clear geographic aim, but the overall pattern was in a westerly direction so that the end result appeared to be an intentional and inexorable march to the West.

Regardless of the mechanism, the frontier was pushed westward, opening prime agricultural lands in the Ohio Valley and rich mineral deposits in the upper Midwest, and attracting large influxes of new immigrants to newly established western towns. Lake Erie quickly replaced Ontario as the keystone of the lakes. In 1848, six of the seven outlets to the Great Lakes tapped Lake Erie (Lenihan 1987:28). After mid-century, the rest of the Upper Lakes, in particular Lake Superior, prospered as a result of the discovery of copper (1843) and the opening of the Soo Locks (1855). Not only did these new developments move commerce and industry to the Upper Lakes, they also robbed

Lake Ontario of much of its marine traffic after the construction of the Erie Canal. As a result, ships, captains, and sailors were siphoned away from Lake Ontario to take part in western lake trade (Pound 1945:323; Lenihan 1987:29). Improvements to transportation routes throughout the Great Lakes region and better lake facilities on the Upper Lakes contributed to this westward expansion.

Improvements to Transportation and Routes: Charts, Aides to Navigation, Roads, and Canals

The earliest map of the entirety of Lake Ontario based on direct observations was made by René-Francois de Bréhant de Galinée in 1670, following a 347-day trek through southern Ontario (Hughes 1993). Over the next 140 years there were incremental improvements to maps and charts of the lake and its environs but no accurate chart of the entire lake. By 1800, there were sailing directions to navigate between ports and major harbors had been charted, but there was no lake-wide chart until Augustus Ford created one for the U.S. Navy during the War of 1812 (Matheson 1775-1802; Ford 1842; Cain [1985]). Captains W. F. W. Owen and Henry Bayfield of the Royal Navy completed similar charts of all the Great Lakes except Lake Michigan (which lay entirely with the U.S.) by the late 1820s. These were finally published in 1830 (Wightman 1994:4). However, an advertisement posing as an article in an 1838 edition of the *Oswego County Whig* claimed that Canadian captains were making regular use of Ford's chart, which was available for $3, while American captains had not adopted it or, presumably, any other (Anonymous 1838). Thus it seems that the widespread desire for navigation charts did not pre-date the inception of a systematic, American, lake-wide survey by too many years. The U.S. Lake Survey began in 1841, but the first charts, depicting Lake Erie, were not published until 1849 and the survey was not completed until 1882. Federal charts of Lake Ontario were not available until 1889 (Brown 1950a:162; Alford 1957b:310; Blust 1976:92; Brown 1988:85).These became the basis of all future lake charts and the lakes have been resurveyed at various times over the subsequent years. However, dangerous and uncharted shoals continued to exist, such as the not-previously-recorded shoal that may have been partly responsible for the storied loss of the *Edmund Fitzgerald* in 1975 (Murphy 2001:34).

In addition to charting the lakes, the Lake Survey was tasked with identifying areas that required navigation improvements (Blust 1976:93). These improvements were to supplement the lighthouses and harbors that already existed in the lakes. The British placed a light atop Fort Niagara in 1781 and built a lighthouse at Gibraltar Point on Toronto Harbor in 1798, as well as two others, at Mississauga Point near the mouth of the Niagara River and at Isle Forest near Kingston, during the first decade of the 19th century. These lights were paid for by a shipping tax assessed by the legislature of Upper Canada in 1803. The Americans finally began building lighthouses a decade later, erecting lights at Galloo Island, Oswego, and Fort Niagara between 1820 and 1823 (Fay and Fay 1927:K-3; Preston 1957; Ellis 1984:296; Wilson 1989; Barry 1996:32). With additional lights erected in subsequent years and the United States Lighthouse Board beginning to systematically erect lights in 1852, the stationary threats to navigation became fairly well marked. Following suit, signal lights were made mandatory for all Great Lakes vessels by the mid-19th century (Hodder 1857:29; Brown 1951a:102-103).

Developing at approximately the same time as the U.S. Lighthouse Board and mandatory signal lights on ships, the U.S. Life-Saving Service was instituted on the Great Lakes in 1854. Initially, there were nine lifesaving boats on Lake Ontario, but two more were added by 1876 and an additional three by 1892. The first Canadian Great Lakes lifesaving station was built in 1882 at Cobourg, Ontario (Brown 1951b:102-103; Wolcott 1962; Ellis 1984:296-297; McLeod 1988; Barry 1996:135). Despite the efforts of the lighthouse keepers and the lifesaving teams, ships continued to be lost on the Great Lakes. In a single 20-year period, 1878-1898, gales damaged nearly 6,000 ships, of which 1,000 were total losses (Carter and Prince 2003:6). Thus, even with nearly fully developed safety improvements near the height of Great Lakes shipping, the lakes remained a dangerous place to navigate. The rapid expansion of lake trade led to an increased number of inexperienced, overworked, and underpaid sailors, and high freight rates often led to overloading or hasty and improper stowing, with these factors contributing, in turn, to capsizes. Additionally, many captains ignored the federal laws regarding lights and watches (Brown 1950b:235).

Contributing to this danger, especially 1825, was the poor condition of most Lake Ontario ports. The rivers and creeks feeding into Lake Ontario were funnels for materials produced and harvested in the uplands to leave the hinterlands and reach markets where they could be exchanged for goods that then returned via the same rivers and creeks to be distributed in the local economies. However, nearly all of the approximately 14 harbors along the Canadian shore and 9 harbors on the American shore were obstructed by sand bars formed of sediments deposited as rivers entered that the lake lost momentum and, as a result, their sediment loads. These bars made it hard to enter the natural harbors, limiting places of refuge for ships and negatively affecting commerce (Sheaffe 1794; OCMA 1985a; Cain [1985]:7). Most ports were so barred that merchant vessels either had to wait for an opening, wait for cargo to be brought out on the bar in carts and then transferred to the ship by lighters, or perhaps even beach themselves (Anonymous 1962 [1840]:53). W. R. Weightman (1994:4) has argued that that lake schooners, especially those with centerboards, could be beached and loaded. While this practice was certainly possible and was practiced in other parts of the world with unimproved harbors, it is unclear how the lake schooner would be freed without the benefit of a tide (McGrail 1985). Regardless of how vessels were loaded, harbor facilities remained primitive for the first three decades of the 19th century, with many boats built at naturally suited locations along the shoreline rather than at prepared shipyards. Captains relied on natural landmarks to navigate by, such as a large tree near the tip of Point Peninsula and the Pilot Tree at the mouth of the Genesee River. The Pilot Tree was a large elm used as a seamark in conjunction with other trees to judge the locations of bars and other obstructions when entering the river. Emblematic of the transition from natural navigation aids to man-made harbors, the Pilot Tree was removed ca. 1837 when the piers were built for the port of Charlotte (Cook 1930; Harris 1984).

Major harbor improvements began in New York in the 1825 and in Ontario during the 1830s. The development of Canadian ports benefited from a mixture of private and federal initiatives acting on natural harbors as the surrounding port communities began to take shape and develop an invested merchant class (Taws 1991; White and Montgomery 1994:39; Wightman 1994:10). These improvements continued steadily, although intermittently, throughout the 19th century.

Conversely, the majority of American improvements were federally funded. Fairport harbor was constructed in 1825, Oswego in 1827, and Great Sodus Bay (Sodus Point) in 1829, as was the port of Charlotte. The majority of these projects involved the clearing of bars and were matched by similar improvements to Lake Erie ports such as Erie (1824), Cleveland (1825), Buffalo (1826), Ashtabula (1826), and Lorain (1826) (Fay and Fay 1927:D-8-9,D-15,K-3). The mouth of the Black River was also improved during this time, with training walls installed to funnel the current into Black River Bay and maintain a usable channel through the sands that could potentially limit access to the town of Dexter (Vinton 1829; Stockton 1836). In fact, prior to the Martin Van Buren administration (1837-1841) lake ports received regular government monies for harbor and channel improvements (Williams 1947:218; Anonymous 1962 [1840]:53). These improvements allowed for increasingly larger and more efficient vessels, which in turn permitted reduced freight charges and increased commerce. Improved channels and harbors allow ships to have deeper drafts and thus to carry more cargo with no significant addition to operating costs (Laurent 1983:2,11). The improved harbors were also a boon to the burgeoning steamboat traffic on Lake Ontario. By the 1830s, these vessels had increased their average speed from approximately 11.3 km/h to 16.1 km/h (Wightman 1994:9-10). This increased speed and the presence of improved docks and deeper harbors permitted steamboats to call at a larger number of ports while still transiting the lake in a reasonable amount of time. These improvements allowed steamboats to work their way deeper into the lake market and to begin to replace sailing vessels. The harbor improvements also coincided with other improvements to bring Lake Ontario in the larger national economy. For example, the initial improvements to Oswego Harbor were finished at nearly the same time that the canal to Oswego was being completed. The initial lake improvements also occurred during the same period as construction of the Erie Canal, allowing the Lake Erie ports to better serve canal traffic and the Lake Ontario ports to continue to compete.

Improvements to the U.S. Great Lakes ports, however, slowed and stopped during the Van Buren presidency. Hopes of major improvements on the lakes were completely dashed in 1846 when James Polk vetoed the River and Harbor Bill. Polk, a strict constructionist, wrote that he did not feel that the Great Lakes should receive federal money because they engaged in neither international trade nor housed the Navy. In his opinion, their improvement was an internal issue that should be funded by the states (Williams 1947:218-219; Brown 1950a:162; Anonymous 1962 [1840]:53). This policy not only stopped new improvements but allowed improved harbors such as Oswego to deteriorate. The state of the lake harbors during this period is reflected in Edward Hodder's (1857) *The Harbours and Ports of Lake Ontario*, which shows that the primary lake ports were improved but generally less developed than they are today. Following the American Civil War, there was a substantial reinvestment in U.S. lake ports. Some of these projects, such as the 1839.3 m breakwater built at Oswego in 1882, were major projects (Fay and Fay 1927:K-5-7).

These improvements had a marked effect on both sailing and steam vessel design. The relationship between navigation improvements and vessel design is complex, and it is often unclear if vessel design led or followed improvements. However, there is evidence for the Great Lakes that ship construction led navigation engineering. In 1876 the largest lake vessels could safely operate at a loaded depth of 5.2 m but were only loaded to 4.6 m due to channel depths. Similarly, in 1900 many lake vessels could not load to their full capacity and still pass the St. Claire Flats or the Soo Locks at Sault Ste. Marie (Marvin 1902:408; Lenihan 1987:39). In both cases shipbuilders were anticipating navigation improvements that would eventually arrive, hopefully during the working life of the ship. Similar tensions still exist in the modern period, such as in designing the Connecting Channels and Harbors Project for the Upper Lakes.

The repeated references to canals and shallow harbors should indicate how dependent Great Lakes trades, and particularly that on Lake Ontario, were on navigation improvements. The U.S. Government's unwillingness to fund regular improvements was one of the principal reasons that the Canadians led in Lake Ontario-region canal construction during the 19th century. The St. Lawrence rapids and Niagara Falls initially blocked Lake Ontario from all through-shipment, and, with the exception of coal, there was little market for north-south trade on Lake Ontario after the first years of the 19th century (Pound 1945:326). Consequently, canals were of paramount importance to maintaining Lake Ontario as a vital link in Great Lakes trade.

The first canal in the Great Lakes-St. Lawrence River system was completed in 1779 around rapids on the St. Lawrence River. This canal was ordered by Governor Frederick Haldimand and designed by Captain William Twiss, the engineer responsible for Carleton Island's fortifications, to make communication and transportation between Montreal and Lake Ontario easier, cheaper, and safer. Other canals followed during the next three decades, such as the early canal at Sault Ste. Marie built by the Northwest Fur Company in 1798 and the Wood Creek canal constructed ca. 1800 to link the Mohawk River and Oneida Lake (Van Cleve 1877:96; Fay and Fay 1927:D-8; Patterson 1973:3).

However, as elsewhere in much of the North American interior, major canal construction in the Lake Ontario drainage basin did not begin until the completion of the Erie Canal (Figure 6.3). The Erie Canal is situated well beyond the shoreline of Lake Ontario, but its impact on the landscape and culture of Lake Ontario is undeniable. Begun in 1817 and completed in 1825, the Erie Canal drew the focus of western New York to the canal route and away from Lake Ontario. Following the construction of the canal, most expansion along the lake's southern margin tended to be inland, where lands were better drained and the canal offered direct access to New York City. As a result, towns developed along the canal route, 6 km to 24 km south of the lake, and lake ports without connections to the canal faltered (Fay and Fay 1927:B-1-3; Pound 1945:206,255; Meinig 1966b:160; G/FLRPB 1972:8).

The Erie Canal also helped develop regional specialization in New York agriculture. Pressure for the canal began when the western New York communities had stabilized sufficiently and created enough agricultural improvements that excess

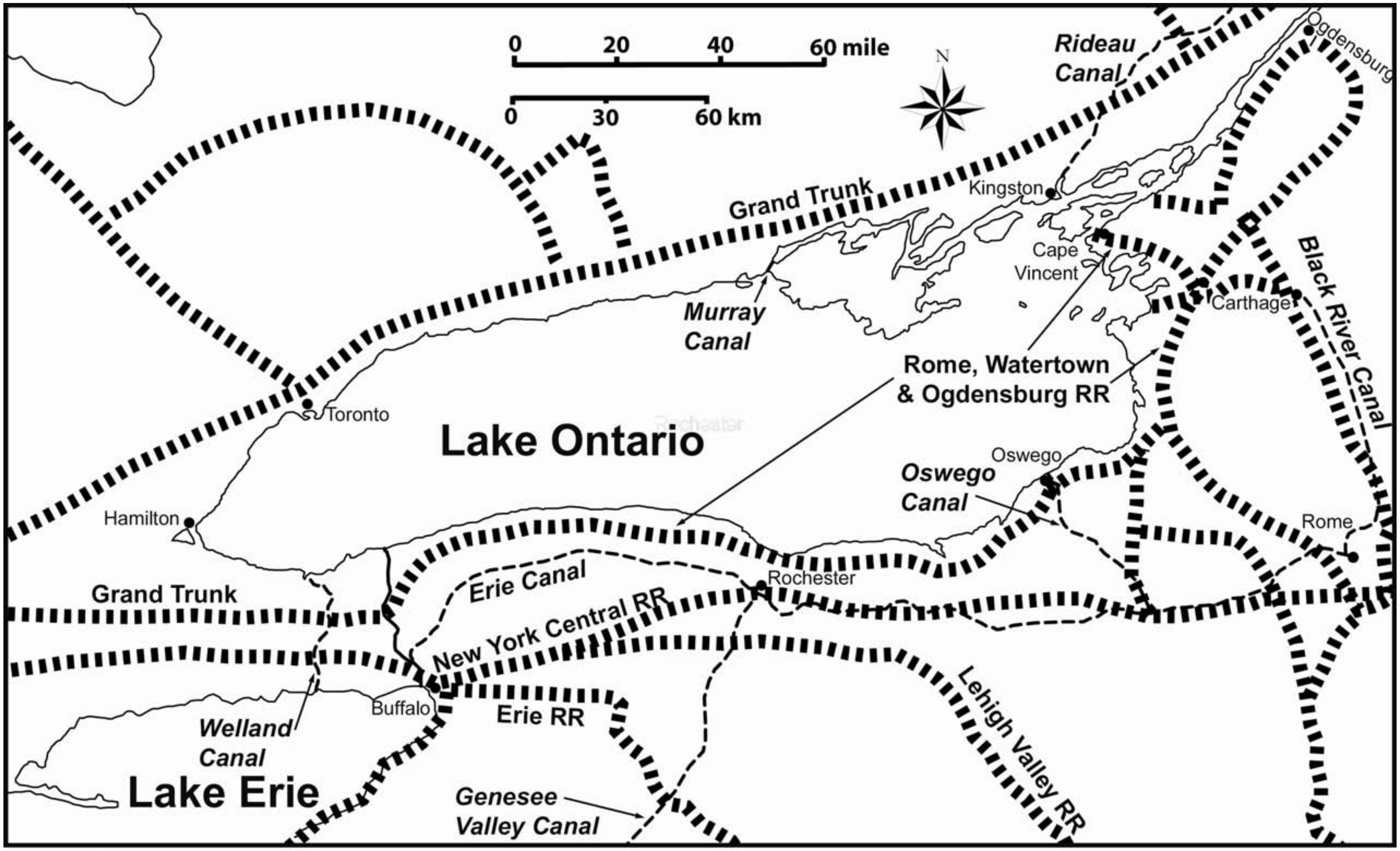

FIGURE 6.3. Canals and major railroads along and to the Lake Ontario shore.

production became possible. The canal created a market for this surplus, allowing for a transition from subsistence to commercial farming and the development of specialized, mono-crop production (Meinig 1966b:165; Smith 2002). Much of this production extended to the lakeshore. The canal drew on an approximately 48 km radius, which included all of the lake's southern shore. Thus much of the fortunes of the New York shore of Lake Ontario began to rise and fall with the canal rather than with the lake. For example, the financial panic of 1837 was partly caused by excessive land speculation and investment around the Erie Canal, which had repercussions through the region. Conversely, western New York boomed during the 1860s when the canal was substantially improved, allowing for larger and more efficient shipments (Pound 1945:207,209; Meinig 1966b:177).

While the Erie Canal was a boon for farmers along the south shore, it had a negative impact on the New York lake ports and Lake Ontario shipping in general. In 1818, a tavern at Hanford's Landing (Charlotte) was offered for sale in the *Rochester Telegraph*. This location was seen as a prime location because the steamboat *Ontario* called there twice a week to take on freight and passengers, and "a great proportion of the produce of this country is forwarded from" there (M'Vean 1818). However, within a decade this would no longer be the case: the opening of the Erie Canal would lead Rochester to turn its back on the lake and export much of its goods through the canal. Charlotte would remain a notable lake port but it would no longer vie for dominance on the lake. Shipping in general on the lake was hurt by the canal, as it became easier for most cargos to be transshipped from schooners to canal boats in Buffalo and shipped from there directly to New York City, bypassing Lake Ontario altogether. Writing his memoirs in the 1870s, John Bedford (1998:45) described the situation well, if with a bit of hyperbole:

> But the Erie Canal put an end to all this business in these ports. After it was opened for navigation you could not see a sail sometimes for weeks. All this change was a gain for the City of New York but death to Montreal and Quebeck [sic] as well as Kingston and Cape Vincent.

Jefferson County in extreme northern New York was particularly hard hit, as were its major ports at Sackets Harbor and Cape Vincent. The canal drew commerce and settlement away from this area causing a decline in settlement by 1830 (Bonney 1985:35-36).

Oswego was also hurt by the opening of the Erie Canal. Prior to 1825, Oswego had been the principal port of the Syracuse-area salt springs, shipping as much as 30,000 barrels (3,818,182 kg) a year. Much of this salt was shipped west along Lake Ontario, over the Niagara portage, and onto Ohio and the growing Midwest. However, the Erie Canal drastically altered this trade, providing a more convenient route for westbound traffic (Anonymous 1861; Cooper 1905 [1809]; Pound 1945:248; Snyder 1971:46). The threat of this change was readily perceived by the merchants of Oswego, as evidenced by an 1820 article in the *Oswego Palladium* attacking the idea that the then-proposed canal would be significantly safer than the current route through Lake Ontario (Anonymous 1820).

Oswego, however, was able to revitalize itself in 1828 with the completion of the Oswego Canal, which fed into the Erie Canal north of Syracuse. Combined with the harbor improvements begun the year before and finished the next year, this canal returned Oswego to its dominant role on the American shore of the lake. As a result, the population of Oswego ballooned from 600 in 1827, to 1,310 in 1828, and 2,116 in 1830, and Oswego began to develop shipbuilding and other industries that allowed it to function as both a lake and canal port. The opening of the Welland Canal in 1835 gave Oswego an additional boost. The availability of flour mills at Oswego and congestion in the Erie Canal locks and at the terminals in Buffalo made the Welland-Oswego route competitive with the direct canal route. Indicative of this increase, the population of Oswego swelled again in 1835, reaching 3980 (Fay and Fay 1927:B-2,B-7-8; Meinig 1966b:161). By 1853, Oswego was contributing 18% of the total goods shipped through the Erie Canal and for the rest of the 19th century the town’s well-being was tied to the Welland and Erie Canals. For example, Oswego benefited from the Reciprocity Treaty of 1854, which allowed for the duty free importation of natural products from Canada.

As the only Lake Ontario connection to the Erie Canal, Oswego received a good deal of this trade. Conversely, the town was hurt in 1872 and again in 1882 when the tolls on the Erie Canal were first reduced and then abolished, while the Welland Canal toll remained constant. The extra cost of passing through the Welland Canal removed any advantage of speed that the trip to Oswego granted (Anonymous 1897; Fay and Fay 1927:B-7-8; Meinig 1966b:162).

The Black River Canal that ran from Carthage in Northern New York to intersect the Erie Canal at Rome was another attempt by an area initial harmed by the Erie Canal to benefit from it. Unfortunately, this canal, begun in 1839 but not completed until 1855, was immensely expensive and difficult to build, requiring 109 locks in 56 km. The Black River Canal was not a financial success and arrived too late to rejuvenate the Black River Valley (Meinig 1966b:161).

The Canadians also built multiple canals in the years following the completion of the Erie Canal. One of the earliest on Lake Ontario, the Rideau Canal, was begun in 1826 and completed in 1832. It linked Kingston to Ottawa (then Bytown) and then, via the Ottawa River, to Montreal, circumnavigating the St. Lawrence rapids by connecting lakes with short stretches of canal and creating a through-river from Lake Ontario to Montreal. The British government financed the project because it was intended for military transportation of men and supplies. This canal, a direct result of the War of 1812, was built as a means to prevent U.S. forces from cutting off communication with Ontario by controlling the St. Lawrence River. Unfortunately, the restraints of military strategy made the canal less useful for commercial transportation. The canal did contribute to Kingston shipping activity but swung inconveniently west and was of such small dimensions that most lake vessels did not fit (Hall 1829:231,234; Odle 1951:242; Curry 1965:210; Ten Cate 1982:71,73,96; Wightman 1994:9; Barry 1996:65; Holtham 2000 [1831]:118).

The St. Lawrence canal system, forerunner of the modern Seaway, served the same purpose as the Rideau Canal but was designed for commercial, rather than military, transportation. However, as originally conceived, the St. Lawrence canals were military canals very similar to the Rideau. The British military initiated substantial construction on a series of canals circumventing the eight major rapids on the St. Lawrence River in 1779. These canals were designed only for bateaux and Durham boats with drafts less than 1.2 m and consequently were not useful for commercial trade. Many sail and steamships shot the lighter rapids with Native American or other local guides. However, when an impasse was reached, passengers transferred to stagecoaches to avoid the rapids and goods were loaded aboard bateaux to shoot them (Ten Cate 1982:66,96; Dickens 1987 [1842]:208; Brown 1988:10). Visiting in the early 19th century, Basil Hall noted correctly that the lack of effective canals around the St. Lawrence rapids blocked Canada from the sea. However, Hall also recognized that a commercial canal system along the St. Lawrence River would never materialize until Canada was united (Hall 1829:227, 244). Consequently, despite planning as early as 1833, it was not until after the 1841 unification that construction began in earnest. The canal, finished in 1848, had locks 61 m long, 16.8 m wide, and 2.7 m deep (Odle 1951:242; Ericson 1969a:101; Ten Cate 1982:96).

The improved St. Lawrence canals increased the volume of freight and cut the rates in half. Yet, even at 2.7 m deep, the canal could not admit most ocean vessels and consequently required the transshipment of goods bound for Europe, such as grain for Great Britain. Further improvements were planned for the system immediately following the 1867 Act of Confederation. These were completed by 1884, but the system underwent continuous improvement until reaching stable dimensions in 1901: 270 x 45 x 14 feet (82.3 x 13.7 x 4.2 m). However, by the 1950s, the system was lagging behind the other Great Lakes canals and it was necessary to deepen the channel to 8.2 m in order to admit comparable vessels (Odle 1951:242; Gilmore 1957a:23; Ten Cate 1982:97). The modern St. Lawrence Seaway was completed in 1958 and opened in 1959, allowing ocean vessels to come and go from Lake Ontario. The seaway required entire villages to be moved and thousands of acres flooded to create the artificial Lake St. Lawrence that eliminated the Long Sault Rapids. It also served to direct ship traffic away from

Kingston, reducing the role of this historically important city (Ten Cate 1982:97; Moore 1996b:8).

The third major, and most important, canal on Lake Ontario is the Welland Canal. Of the Niagara River's 53 miles from Lake Erie to Lake Ontario, only three fourths are navigable. The remaining one fourth is consumed by Niagara Falls and the rapids and whirlpools above and below. The force of the falls and rapids are so great that three War of 1812 vessels condemned after the Rush-Bagot Agreement were sent towards the falls, causing one to break up in the rapids, one to sink before reaching the falls, and one to go over the falls producing no more than one 30.5 cm pieces "mashed as by a vice" (Trollope 1993[1832]:196). Without the Welland Canal, Lake Ontario is completely barred from the other Great Lakes (Willoughby 1956:155; Murphy 1959:174). As Basil Hall (1829:214) pointed out, "The Welland Canal is intended to perform the same step over the intervening land as that made by the Falls and Rapids of the Niagara, from the level of Lake Erie to that of Lake Ontario [99.6 m]–only in a more gentle and manageable way."

Despite the isolation caused by Niagara Falls, the cost of constructing a canal during the French and early British periods outweighed the benefit to commerce. However, during the late 18th and early 19th centuries, increased migration to the Niagara Peninsula, increased regional agricultural production, the need for improved military transportation between Lake Erie and Lake Ontario, and the diversion of commerce through the Erie Canal coalesced to make a canal paralleling the Niagara River much more attractive (Willoughby 1956:156-158; Milbert 1968[1828]:133).

The successful proposal and pursuit of the first Welland Canal is unanimously attributed to William Hampton Merritt of St. Catharines, Ontario and his Welland Canal Company. Merritt conceived of the canal in 1818, likely drawing on earlier proposals. The plan was approved and construction begun during 1824, and a working canal opened in 1829 (Anonymous 1799; Hall 1829:215; Murphy 1959:174; Ten Cate 1982:67; Barry 1996:63; Monk 2003:10-11). This canal, similar to the Erie Canal, was one of the first breaks from the pioneer road-and-watercourse-oriented transportation and settlement pattern in the Lake Ontario region. The Welland Canal shifted commerce away from Niagara (Niagara-on-the-Lake) and the Niagara portage. While the portage continued until at least 1854, the commercial sector that had grown up around the portage declined quickly (Konrads 1963:17-19; Turner 1994:199,201). Like the railroads that would follow, the canals allowed for greater control over transportation and a reconfiguration of the local transportation landscape, which in turn had repercussions for the settlement and commercial landscapes.

The first canal, however, was tightly tied to the natural environment. It followed the paleo-channel of 12 Mile Creek through the Homer Bar, and relied heavily on the Niagara River. Unfortunately, the strong currents of the Niagara River made it difficult to move vessels upstream to Lake Erie. Consequently, the first canal was modified by shifting its western terminus to Port Colborne rather than the Niagara River, while still utilizing the 12 Mile Creek paleo-channel to approach Lake Ontario. This version opened in 1833 and is widely considered the first Welland Canal. This canal had wooden locks 110 x 22 x 8 feet (33.5 x 6.7 x 2.4 m) and could accept vessels of approximately 90-120 tons (Hall 1829:216; Gilmore 1956:250; Willoughby 1956:161-165; Murphy 1959:173-175; Styran and Taylor 1992; Tinkler 1994:25).

The Welland Canal was then rebuilt in 1846, 1881, and 1932, taking slightly different courses with each renovation. The second canal, initiated in 1846 and completed in 1850, increased the lock size to 150 x 27 x 9 feet (45.7 x 8.2 x 2.7 m) and changed the building material to stone. With this canal, 300–350-ton vessels capable of crossing the Atlantic Ocean could fit through the locks (Murphy 1959:175; Monk 2003:20,46,54). While the second canal continued to be used after 1884, the third Welland Canal (begun in 1881) was completed in that year and drastically increased the size of vessels that could move between the lakes. This canal had stone locks 270 x 45 x 10 feet (82.3 x 13.7 x 3 m) that were quickly deepened to 14 feet (4.3 m). The third canal also witnessed the widespread transition from sail to steam. Propulsion through the first two canals was largely provided by mule teams, which were commonly dragged backwards by vessels when the wind shifted unfavorably. The shallow draft of the early locks also meant that it was often necessary to partly unload a vessel to get it over the lock sills. Thus a trip through the canal could take anywhere from two to seven days. With the third canal, however, steam tugs for propulsion and deeper locks made the passage considerably more convenient (Gilmore 1957a:17; Murphy 1959:175; Barry 1996:123-126; Monk 2003:40-41). The fourth Welland Canal was begun in 1913, but, interrupted by World War I, its construction was not completed until 1932. The locks of this modern canal were 859 x 80 x 30 feet (261.9 x 24.4 x 9.1 m) and could accept vessels up to 715 feet (218 m) long (Murphy 1959:176-177).

With each increase in size, the Welland Canal improved commerce between the Great Lakes. Initially, the Welland Canal increased the market for regional farmers, allowing them to expand beyond subsistence production. It was also a boon for the milling and timbering industries. In later years, the canal served to maintain Lake Ontario as a link in the Great Lakes bulk freight transportation system. The canal also made previously unimportant towns, such as Port Dalhousie, Port Robinson, and St. Catharines, into important shipping centers. Large shipyards were built in many of these ports, increasing the local economy. However, with each shift in the canal route, a once-bustling town could find itself quickly marginalized. For example, Port Dalhousie came into being with the first canal and flourished during the 19th century, with numerous shipyards and an early Great Lakes drydock (1850), as well as grist mills taking advantage of the water flowing through the canal and taverns taking advantage of idle sailors waiting for a tow. However, the fourth canal moved the mouth to Port Weller leading to the immediate decline of Port Dalhousie (Konrads 1963:21-23). Yet, the canal did not have its desired effect on Canadian commerce, due to poor coordination between the Welland Canal and St. Lawrence Canal projects. During the 1850s, the St. Lawrence Canal was built with 200 x 45-foot (61 x 13.7-m) locks, while the Second Welland Canal, completed in 1845, had 150 x 26.5-foot (45.7 x 8.1-m) locks. Consequently, a 175-foot (53.4-m) vessel could exit Lake Ontario through the St. Lawrence, but only a 135-foot (41.2-m) vessel could pass through the Welland Canal. This disparity required the Welland Canal to be rebuilt a third time shortly after the second version was completed.

Both canal systems were built on Canadian soil and were intended to give the Canadians control over shipping on Lake Ontario. However, until the completion of the St. Lawrence Seaway, the canals seldom simultaneously had adequate dimensions to allow contemporaneously large vessels to transit from Lake Erie through to the Atlantic Ocean. Consequently, much commerce during the 19th century passed through the Welland Canal, only to be offloaded at Oswego, to travel from there to the Erie Canal (Willoughby 1956:165-166; Monk 2003:11,22).

Arguably, the first truly distinct Great Lakes vessels were the canal schooners built to fit the second Welland Canal (Marvin 1902:398; Lenihan 1987:28). These vessels can be traced to the ***Welland Canal***, launched in 1828, the first schooner built specifically to pass through its namesake (Monk 2003:42). By 1860, 750 of the approximately 1,400 craft on the Great Lakes were canallers (Minnesota 2004). St. Catharines was the primary canal schooner building city, with Oswego following in importance, but most shipyards on the Great Lakes produced at least one vessel designed with the fullest dimensions that could possibly fit through the Welland Canal. These canallers were built to fit the fullest dimensions of the canal they were destined to transit, allowing them to carry as much cargo as possible on each voyage. Consequently, the hulls were boxy with nearly flat bottoms, hard bilges, nearly vertical sides, very straight stems, bluff bows, and square transoms. Furthermore, the maximum beam was extended as far forward and aft of the centerline as possible to increase the cargo capacity of the hold. For all trades, but especially the grain trade, a few additional cubic inches equaled a significant increase in profit, so the box- like characteristics of these vessels tended to increase with time (Gilmore 1957a:20; Barry 1996:60, 124; Monk 2003:45-47). These ships were built so close to the dimensions of the canal that it was not uncommon to have to dub the exterior planking in order to squeeze the hull through the locks during the first voyage. Captain Augustus Pickering of Sackets Harbor offers a graphic example of the importance of the Welland Canal in hull design. Upon reaching the canal in 1829, Pickering committed suicide moments after realizing that his newly launched ship was two inches too wide to enter the locks (van Gemert 1972:292; Brown 1988:19; Barry 1996:124).

The design requirements of the canals extended beyond ship hulls. Due to the shallow draft required to pass the lock sills, canallers did not have good inherent seakeeping characteristics. Consequently, it was necessary to increase the draft of canal vessels in such a way that the draft could be reduced upon entering the canal. After a brief flirtation with leeboards, centerboards became ubiquitous on canal schooners (Gilmore 1957a:20; Barry 1996:64; Monk 2003:45,54). All forward and aft extensions of canallers were also reduced so that they did not interfere with the operation of the lock. Stern davits for the ship's boat were hinged so that they could be swung inboard upon entering the lock. Similarly, the bowsprit was steeply canted in order to clear the lock gates (Gilmore 1957a:20; Barry 1996:64; Monk 2003:51). The rig of these vessels was almost always that of a schooner, though barkentine or brigantine rigs were used on larger vessels (Gilmore 1957a:19; Minnesota 2004; Monk 2003:45,54). Special loading considerations were also made for various trades. For example, timber droughters had ports in the hull for loading timber, while grain and ore carriers had hatches athwartship for ease of loading around the centerboard trunk (Monk 2003:47).

Unfortunately, among all the sail and steam vessels on the lakes, canallers had the highest incidence of foundering with all hands; they account for as much as 90% of all entire-crew fatalities by 1877. This high mortality rate was likely caused by the placement of cabins below deck, boxy hulls that did not handle rough conditions and that were more easily swamped, and the chronic overloading of cargo vessels (Monk 2003:55-56,62-63,Appendix G).

Despite the fact that early settlers often used Lake Ontario as a highway when terrestrial roads were impassible or nonexistent, roads were part of the shore landscape from the late 1700s on (Cook 1931; Bedford 1998). These roads and the difficulties in using them influenced how residents of the shore perceived distance, the seasons, and the role of water in their lives. The more difficult the road, the greater the effective distance between two points, and the difficulty of the road was often affected as much by the season as by the type of road. Travelers perceived all of these factors together in deciding when to travel and whether to go by land or by lake. Consequently, consideration of the maritime landscape of Lake Ontario must also take into account travel by land, both along the shore and on roads that radiated out from the shore to carry people and vehicles into the uplands.

The appointment of John Graves Simcoe as Lieutenant Governor of Canada in 1791 initiated systematic road building along the north shore. Simcoe, a former military engineer, toured the country immediately upon arrival. Based on his observations of the terrain, existing roads, mills, and population centers, he developed a road plan to connect regional centers that was well adapted to the environment. Most of the roads were laid out along survey lines, but others, called “given roads” connected mills, entrepôts, and villages throughout Upper Canada. Many of these given roads were based on Native American paths that connected important places through the most convenient route and survive today in the modern highway and road system (Wood 2000:122,161-162). Two of these roads are the Danforth Road and the Kingston Road, both of which run near the Ontario shore and connect the eastern Bay of Quinte-Kingston area with York (Toronto). The Danforth Road, named for Asa Danforth, the American contractor who built it, ran close to the shore, dipping down into the Prince Edward County peninsula, in order to serve the many communities and farms clustered along the littoral. However, the War of 1812 impressed upon the Canadian government how vulnerable their littoral boundary was and, like the Rideau Canal, the Kingston Road was cut farther inland to replace the Danforth Road. While the Kingston Road became the dominant east-west terrestrial thoroughfare (making up large portions of Route 2 today), the Danforth Road continued to be used because it offered convenient access to steamboats at Carrying Place, Ontario, which allowed travelers to take passage to locations not directly served by the road system (Preston 1954:6; Lenihan 1987:23; Mihorean 1989:101-103).

In its 306-km length, the Kingston Road included a representative sample of the improved road types of the 19th century. Built and maintained by different individuals and municipalities, the road consisted of corduroy, plank, and macadamized sections

(Mihorean 1989:102-103). All of these road building techniques were superior to dirt roads, which often turned to bogs after a rain. Corduroy roads consisted of logs laid perpendicular to the direction of travel so that the road looked like a long, narrow swatch of corduroy material and delivered an experience similar to a modern vehicle driving along train tracks. No terrestrial travel in this period was particularly enjoyable, but Charles Dickens may have been referring to a corduroy road when he described riding in a coach as "enough, it seemed, to have dislocated all of the bones in the human body" (Fleming 1956:301). John Galt had a similar experience in 1831 that is quoted at length by Mark Mihorean (1989:119):

> With the customary peril of neck and limb we got under way, the children titillated beyond the power of complaining by the jolting… In our raging vehicle we were driven like a tempest, and for at least thirty miles of the journey were so occupied with feet and fang in counteracting the jumbling, that I had but little time to be, as the Cockneys say in Scotland, "a looking at waterfalls."

At about the same time that Galt was describing his coach ride, new road building techniques were introduced to the region. Plank roads began to appear during the late 1830s and were widespread in Ontario and New York by the 1840s, with more than 300 companies maintaining several hundred kilometers of plank roads in New York by 1855. These roads were constructed of 3-inch (7.6-cm) thick, 12-foot (3.7-m) long oak planks laid across 4 x 6 inch (10 x 15.2 cm) sleepers and offered smoother and more rapid movement. Constructed as toll roads to cover the cost of construction, plank roads reflect the demands for speed, efficiency, and comfort that were growing during the 19th century. By mid-century they were often employed as feeder roads to railroad depots, reinforcing their role in improved transportation. Unfortunately, deterioration generally made plank roads a financial liability within five years of construction. If the toll company did not invest in the constant maintenance they required, these roads became merely obstructions (Meinig 1966b:165; Wood 2000:123-125) At the same time that plank roads were becoming popular, macadamized roads, which offered a lower-maintenance alternative, were introduced to the region. Macadam is broken stone, compacted to form an interlocking surface that resists the rutting effect of the narrow iron wheels common on early vehicles. With the addition of grading and side-drainage ditches, these roads were durable, all-season roads that required less upkeep than most other options (Wood 2000:120).

New York had similar road types and despite a later start in road building was on a similar trajectory to Ontario by the 1830s. Poor roads hampered overland movement during the War of 1812, making it difficult for Chauncey to arm and outfit his fleet, but, with increased settlement after the war, the road system expanded rapidly (Pound 1945:186; Meinig 1966b:156,165). The Ridge Road (old U.S. 104), following a Native American Trail, ran along the Niagara Escarpment, touching the Niagara and Genesee rivers and continuing in a spur to Oswego. A web of roads also tied together western and northern New York and connected them with Lake Champlain, the St. Lawrence River, inland centers, and New York City. Many of these roads followed the terraces of waterways such as the Hudson, Mohawk, and Black rivers and were built by a mixture of private, public, and military organizations (Lamb 1956a:16; Meinig 1966b:157). New and improved roads greatly increased travel speeds throughout the Midwest. In 1800, travel time from New York to eastern Illinois was six weeks, and it took four weeks to go from New York to Detroit. However, by 1830 the travel time from New York to Chicago was three weeks and Detroit could be reached in less than two (Muhlenbruch and Stuart 1962:161). By the end of the 19th century the road system of New York was widespread and dependable enough to allow regular and easy overland travel (Knowlton 1892). These roads, in conjunction with the canals, steam navigation, and the expanding rail network reduced the effective distances between the Great Lakes and the East. In doing so they drew the Great Lakes into the established commercial and communication system and transformed the lakes in the American and Canadian psyches from frontiers to heartlands.

Helping to close these distances and serving as a stop-gap between the desire for faster transportation and the widespread arrival of steam transportation were the stagecoaches. Stages began running to the New York shore in 1801 and by 1812 along the north shore. The service prospered until the 1840s with regular, and often twice-daily, service between major towns with frequent stops at smaller settlements (Mihorean 1989:101,108; Turner 1994:199; Wood 2000:126). However, by the 1840s stagecoaches were beginning to feel pressure from steam transportation. Coaches had little advantage over steam navigation around Lake Ontario because most of the communities were oriented towards the lake. The stagecoaches did not service many areas that could not be reached by ship; steamboats and stages essentially ran the same routes, simply on opposite sides of the waterline. The coaches were also out-competed in terms of price. When the first steamer on Lake Ontario, the *Frontenac*, was launched in 1816, a stagecoach ticket from Kingston to Toronto was $18. A ticket for the *Frontenac* was $12. Within a year, stage lines had dropped their prices to $10. However, by 1844 steamboat fares were generally $5 for a cabin and $3 for deck accommodations, far too low for stages to match (Mihorean 1989:117). The coaches did, however, have advantages. While steamboats were frozen in port from at least December to March, stagecoaches ran year-round, and many stagecoach lines depended on winter revenues to see them through the summer months when steamboats could out-compete them. The stagecoach lines also held the mail contracts during the early decades of the 1800s. These contracts required them to run on regular schedules but subsidized their business enough that they could continue to run during the navigation season. However, by the mid-1850s the coach lines were generally bankrupt due to the loss of mail contracts and loss of winter fares to the railroads (Mihorean 1989:113,117,124).

Steam Transportation by Lake and Land

The largest transformation in the Lake Ontario maritime culture occurred with the advent of steam. This change played itself out not only on the psychological landscapes of the shore residents, altering how they perceived distance, time, punctuality, and resources, but also on the physical landscape, changing the orientation and fortunes of towns based on railroad routes and depots. Similar to the rising water levels faced by

Middle Archaic people, the change to steam transportation was relatively swift, occurring in a single lifetime, and resulted in jarring transitions that caused a reorientation of assumptions and livelihoods. In a manner that was likely similar to the Middle Archaic Period, some communities adapted to these changes better than others.

Steam transportation became prevalent on Lake Ontario beginning in the years following the War of 1812. Most of these vessels were side-wheel steamers employed primarily in passenger and packet transportation. It was not until the 1830s and 1840s that steamers began to compete with sailing vessels for cargoes, but, by 1850, most large ships being built were steamers. By 1870, three-quarters of new vessels were steam powered, and by 1935 sail was extinct from commercial lake transportation. Early side-wheel vessels were referred to simply as "steamers," as distinct from screw propelled steamships that were known as "propellers." Alternatively, steamships were generically known as "boats" into the 20th century. This terminology likely developed from the term "steamboat," the common appellation for river steamers at the time of their introduction to the Great Lakes (van Gemert 1972:292; Laurent 1983:12; Barry 1996:9).

The first steamer on the St. Lawrence-Great Lakes waterway was the *Accommodation*, which operated on the St. Lawrence River between Montreal and Quebec beginning in 1809. The first steamer on Lake Ontario and the Great Lakes was the *Frontenac*, begun in October 1815 and launched in September 1816 from Finkle's Point (later Ernestown, now Bath) near Kingston. Built on the model of St. Lawrence River steamers, the *Frontenac* was identical to the *Car of Commerce* launched at Montreal in 1815. The 52.1-m long, 740-ton vessel was constructed by two shipwrights who served under Henry Eckford at Sackets Harbor, Henry Teabout (Trebout) and James Chapman, and was captained by James McKenzie, a sailing master in the Royal Navy on Lake Ontario during the War of 1812. Financing for the vessel came from a tightly knit association of Kingston merchants, much like the group that controlled commerce on the lake when all of the traffic was between Kingston and Niagara. The engines were imported from England. When the *Frontenac* went into service during the spring of 1817 it could make nine knots with a good wind behind its three-masted schooner rig. The regular route of the ship was between Kingston, Toronto, and Niagara three times a month (Cruikshank 1926:8-9,12,14; Ericson 1969b:199; Ellis 1984:269; Lewis 1987; Barry 1996:39; Moore 1996a:10).

The Americans at Oswego contributed a smaller steamship several months later. The *Ontario*, measuring 33.5 m long, was begun August 1816 and launched March 1817. This smaller size of vessel became the standard on Lake Ontario for the next several years. The *Ontario* regularly plied between Oswego, Toronto, and Niagara, partly competing with the *Frontenac*. The owners of *Frontenac* expanded their service with the *Charlotte*, the third steamer on Lake Ontario, in 1818. The *Charlotte* ran from Bay of Quinte to Prescott (Ten Cate 1982:66; Lewis 1987:33; Barry 1996:39). The early steamers were usually rigged as schooners and sailed the majority of the time. The engines were employed only when traveling upstream, working against the wind, maneuvering near islands, and in harbors. In fact, passenger steamers were required to carry sails as a safety measure until 1892 (Ten Cate 1982:67; Ellis 1984).

Beyond their rigging and basic measurements we do not have accurate plans of these vessels besides a few broadside drawings made by contemporary observers (e.g. James Van Cleve). However, Hugh Richardson's (1825:9) descriptions of the principles he used to design the *Canada* a decade later seem to conform to the dimensions and drawings of these early vessels. In his promotional essay, Richardson stated that a steamer should be long, narrow, sharp, and deep. These characteristics were based on his belief that less sail made steamboats less inclined to roll allowing them to be narrower, and the notion that they needed to cut through the water rather than ride on top of it. Later Great Lakes steamers certainly embraced the use of large length to beam ratios but tended to remain relatively shallow drafted.

While the *Frontenac* and *Ontario* were the earliest steamboats on the Great Lakes, the lakes lagged behind the rest of the nation. In 1820 there were approximately four steamers on the lakes, 71 on the western rivers and 52 on the Atlantic coast. By 1830 the number of lake steamers had increased to 11, but this increase was greatly outpaced by the 296 steamboats on the western rivers and 183 on the eastern rivers

(Lenihan 1987:27). This condition was not due to any backwardness on the lakes but was simply a matter of need, as evidenced by the thrice monthly sailing schedule of the *Frontenac* prior to 1821 and by the necessity for a good deal of boosterism to promote the *Canada* in 1825. In part, the relatively sparse population of the region and the lack of desire for packet service on Lake Ontario slowed development (Richardson 1825; Wightman 1994:7). The fact that sailing vessels could be built for considerably less money and the lack of currents requiring steam engines likely also played roles. Additionally, Lake Ontario, like much of the rest of the continent, had yet to develop an industrial society and the associated need for punctuality and schedule. However, an influx of immigrants during the 1820s who required passage across the lake, and the increasing number of ports during this period, led to a marked increase in steamboat construction. By 1834, many ports saw a steamer three times a week rather than three times a month, and by 1850 steamers made up approximately one-quarter of the lake fleet (Davidson 1988:245; Wightman 1994:7,10).

However, during the first half of the 19th century, steamboat travel was expensive, inconsistent, and not exceptionally faster than lake sailing, leaving a niche for sailing packet ships outfitted with passenger berths (Brown 1988:9). Traveling during the mid-century, Amelie Murray was greatly displeased with the unpredictability of steam travel in North America. Vessels would leave early or late with no regard for passengers attempting to make a connection. She was also not pleased with her experience on a Rideau Canal Steamer, referring to it as the "smallest dirtiest vessel I have seen in Canada" (Murray 1969 [1856]:98-99). At this time, the railroads were having a negative impact on the canals, and the downturn in business may have begun to affect the quality of canal steamers. This state of affairs was hinted at by Murray, who found traveling on lake steamers much more satisfactory (Murray 1969 [1856]:99,104). Traveling at nearly the same time, William Chambers described a St. Lawrence steamer traveling from Kingston to La Chine as a "floating hotel" (Chambers 1968 [1854]:96).

It is also likely that Ms. Murray would have been even less thrilled with the earlier alternatives. In 1845 it was possible to travel from Montreal to Kingston in 26 hours by taking a combination of river and canal steamboats and stagecoaches. From Kingston it was then possible to take a steamboat to any one of ten Lake Ontario ports (Mackay 1845:13-15). When compared to a similar trip made by bateaux during the late 1700s that took approximately 10 days, if everything went smoothly, and was followed by an additional four day sail to Niagara, the mid-19th century voyage represented an immense improvement in both speed and comfort (Burleigh 1973:90-91,93-94).

In addition to increasing the speed of travel against the St. Lawrence River current, bringing Lake Ontario functionally closer to Montreal, this was also the period of innovative steamer use linking previously disconnected and inaccessible parts of the lake. For example, John Bedford (1998:176-177) described an 1844 incident where a small steamer navigated approximately 800 m up Sandy Creek until it became stuck in the mud. At that point the steamer was backed until it floated again and then began to take on passengers who came to the shore carrying planks that they used to cross the mud and board the vessel. The steamboat then continued on to Oswego where it disgorged its passengers in time to attend a Whig political rally. This sort of impromptu steamboat landing was not an everyday occurrence but it does show the flexibility and ephemeral nature of steamboat docking at mid-century.

Steamboat commerce not only helped to occasionally link formerly disparate communities but seemed to be largely immune to border difficulties during the stressful mid-19th century. The Upper Canada Rebellion and associated Hunter Patriot invasion (1838), as well as the war scare surrounding the Oregon Territory (1844-1846), strained relations between the U.S. and Canada. Fort Wellington at Prescott, Ontario (1838), Fort Ontario at Oswego (1839-1842), and the Martello Towers and Fort Frederick at Kingston are physical evidence of this tension. Even so, throughout this period steamboats continued to ply between Canadian and U.S. ports on a regular schedule maintaining economic and social connections across the lake (Armstrong 1962:220).

Interesting evidence of similar trade routes was discovered by C. F. M. Lewis and colleagues (2000) during the course of a remote sensing survey in the western end of Lake Ontario. They noted odd linear patterns in their data and after geochemical and petrological analyses determined that the lines were composed of combustion residue, likely the result of flushing coal ash into the lake. Coal-fired boilers produce ash and clinker, which was placed in a chute and forced overboard with steam or hot water from the boilers. This practice was not allowed in harbors or canals but was common in the open lake. The majority of the routes identified by this ash ran from Toronto to Port Weller, the mouth of the fourth Welland Canal (finished 1932), and from Toronto to the Niagara River, and tend to be nearly straight lines. However, the borders of the lines are diffuse, suggesting some variance in the routes.

Unfortunately, wood-fired boilers, which were common on lake steamers until the mid-19th century, do not leave such distinct archaeological markers of steamer routes. We do, however, have copious travelers accounts and promotional literature with which to construct the routes and schedules (Richardson 1825; Hall 1829; Anonymous 1834; Mackay 1845; Disturnell 1857; Murray 1969 [1856]; Dickens 1987 [1842]; Holtham 2000 [1831]). Additionally, there may be ephemeral archaeological evidence for wooding stations. Pre-mid-century steamers burned huge amounts of wood. For example, in 1848 the *Empire* consumed an average of 600 cords (2,174.7 m^3) in each trip between Chicago and Buffalo. At 13 trips per season, this single ship burned 234 acres (94.7 hectares), requiring 40 woodcutters at an expense of $10,000 (John 1947). In addition to being expensive and environmentally damaging, it was not practical for most steamers to carry enough wood for even one voyage. As a result, they were required to land at predetermined, but generally isolated, wooding stations along their route to take on more fuel. Wooding stations, also known as wood docks, were constructed by property owners who owned shore property and acquired wood either from their own property or by trading with neighbors. They built a dock out into water deep enough for the steamer to approach and stacked the wood along the dock and back up the bank. Most depots had a shanty nearby for a guard and some constructed a general store to profit from the passengers (Waterbury 1947:209; Ten Cate 1982:101). Interestingly, similar depots were maintained along early railroads where locomotives could reload on wood supplied to the stations by local farmers (Mika and Mika 1972:42). In this way, two of the major contributors to industrialization and urbanization of the Lake Ontario littoral drew directly on the natural and agricultural resources of the region.

Despite constantly improving accommodations and technology, steamers were considered dangerous well into the mid-19th century, due to the constant threat of fires and explosions and the alarming tendency of poorly-loaded propeller ships to capsize. Charles Dickens described riding on a steamer with high-pressure engines as conveying "that kind of feeling to me as if I had lodgings on the first floor of a powder-mill" (Fleming 1956:301). One Cleveland newspaper writer went so far as to suggest that passengers bring their own life preservers. This fear of steamboats was well founded and is borne out in insurance data. In 1857, the cost of losses for steam and sail were approximately equal, while there were three times as many sailing ships on the lakes. At this time, steamers were valued at nearly twice a sailing ship of comparable tonnage, indicating that three steamers were lost for every two sailing ships (Brown 1950a:163, 1950b:235, 237). Supporting this historical data is a *t*-test analysis of 436 Lake Ontario shipwrecks that occurred between 1631 and 1871, which compared sailing versus non-sailing vessels and the most prevalent causes of loss (fire-explosion, capsize, gale, stranded, and collision). Based on this test and reference to a graph displaying counts of the causes (Figure 6.4), fire and explosion were found to be the domain of steamboats ($p < 0.001$), while capsizing, becoming stranded and losses due to gales were dominated by sailing ships ($p < 0.001$, 0.001, and 0.003, respectively). These results are not surprising based on the technology. Steamboats rely on fire for their propulsion and early boilers were prone to exploding, while sailing ships were dependent on the weather and were often driven onto shoals or forced over by unfavorable winds during storms. The lack of significance associated with collisions ($p < 0.776$) is noteworthy in that collisions often occurred between sailing and steam vessels and sailing vessels are generally, though not exclusively, represented as receiving the worst of the encounter. The graph shows substantially more sailing vessels sinking as a result of collisions, but the statistics demonstrate that there was not a significant difference between the number of sailing and steam vessels lost to collisions.

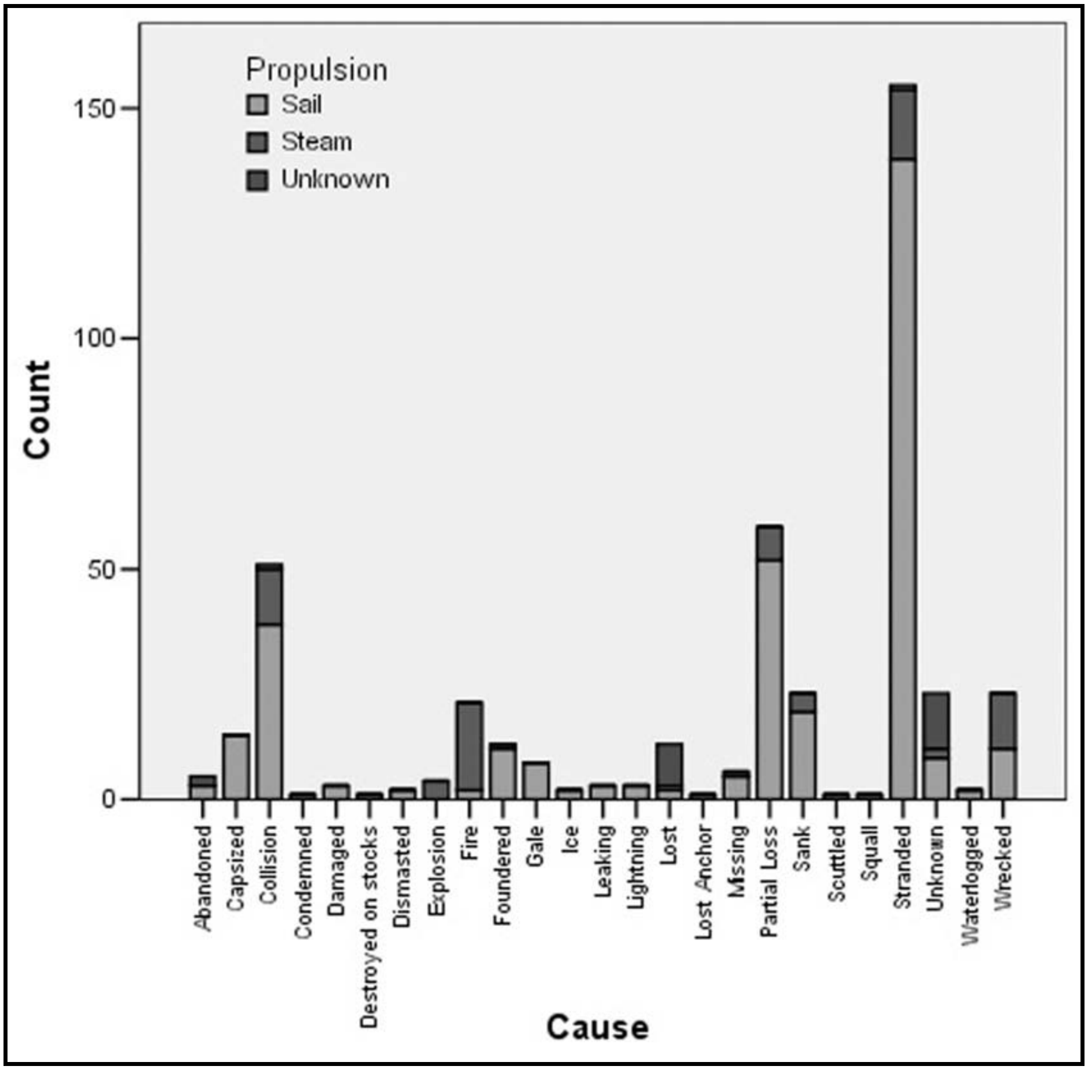

FIGURE 6.4. Causes of vessel loss, divided by propulsion type.

As the century progressed, propeller ships began to press the side-wheel steamers off the lakes, coming to prominence at roughly the same time as wood gave way to coal. However, the side wheel persisted for a number of reasons. Due to the sponson construction of steamer hulls, they had more room on deck and were steadier in choppy seas with less vibration, making them preferable for passenger service. Steamers also tended to have shallower drafts because there was a limit to how deep the paddle wheels could be placed, and, conversely, propellers had to be deep enough to immerse the screw, which was large on early boats. This dichotomy made side-wheelers better suited for shallow harbors and canals. However, their shallow draft also made side-wheelers inappropriate for carrying bulk cargos in their holds (Anonymous 1859; Odle 1952; Laurent 1983; Weightman 1994; Barry 1996). Consequently, during the 1850s there was a transition from steamer to propeller.

The propeller ship was introduced to the Great Lakes in 1841 and eventually surpassed the side-wheel steamer in number ca. 1857, because it was more economical and offered more uninterrupted cargo space. Propellers also had the advantage of fitting though the canals with less wasted space. While “pollywog” steamers with narrow, large diameter wheels situated well aft were built for canal traffic, any thickness of wheel was deducted from the hull width and consequently the carrying capacity of the vessel (Ten Cate 1982:67; Laurent 1983:12; Monk 2003:35). Propeller ships were also preferable to sailing ships in that they were larger and could reach markets quicker and on a regulated schedule. These characteristics allowed propeller ship operators to take advantage of the constantly fluctuating grain market and economies of scale in order to offset the extra costs of steam transportation (Odle 1952:187).

The first propeller ship on the Great Lakes and the second in the U.S., the *Vandalia*, was launched at Oswego during the summer of 1841. The 27.7-m long, 138-ton vessel was built by the consortium of John Ericsson, the Swedish engineer responsible for the propeller design, Sylvester Doolittle, an accomplished local shipwright, and Captain James Van Cleve, an experienced Lake Ontario mariner. The engines were built in Auburn, New York to Ericsson’s specification, and the ship was sloop rigged with a shortened boom to clear the stack situated near the stern. In order to accommodate the unbalanced weight of the aft-mounted engines, longitudinal arch braces ran the full length of the vessel (Alford 1957a:225; Ericson 1969b:200; van Gemert 1972:292; Ten Cate 1982:67,97; Kohl 1994:235; Barry 1996:52). Doolittle went on to become a major producer of early propeller ships, building the *Chicago* (1842) and the *Oswego* (1843). The *Vandalia* quickly proved her value as a canaller, running between Oswego and the Upper Lakes through the Welland Canal within a year of being launched. Due to this use, most of these vessels closely resembled canal schooners, complete with bluff bows, and with the advent of the *Lady of the Lake* (1842), often had upper cabins to counterbalance the cargo and passenger space lost to shallow draft (Marvin 1902:400; Fay and Fay 1927:E-3; Alford 1957a:223, 1957b:306). The use of propellers in the canals is also reflected in their size. Through the 1860s propellers were smaller than steamers, with steamers averaging 440 tons in 1862, while propellers averaged 300 tons, not markedly different from most canal schooners (Marvin 1902:400; Armstrong 1948:153; Heyl 1959:257).

By 1850, there were 50 propeller ships on the Great Lakes, and the owners of these vessels were beginning to adapt their ships to the requirements of the bulk cargo trade. In 1869, the first true bulk freighter, the *R.J. Hackett*, was launched at Cleveland. The *R.J. Hackett* was 64.3 m long with the cabin and pilothouse at the bow and another cabin and machinery at the stern, leaving nearly the entire length of the vessel unobstructed for cargo. The single arch braces of earlier propellers were replaced with two arches built into the hull; while the *R.J. Hackett* carried a few sails, these were reserved for emergencies. The *R.J. Hackett* was also standardized for easier cargo loading. The ore chutes at Marquette, WI were 12 feet (3.7 m) apart. Consequently, the hatches on the *R.J. Hackett* were spaced 24 feet (7.3 m) apart so that the vessel could be fully loaded with only one shift in position. The *R.J. Hackett* was also paired with a tow barge that greatly increased the cargo to fuel ratio. This consort system of towing engineless vessels behind propeller ships grew out of the lean years of the 1850s and became fully developed during the 1870s, providing a final occupation for many displaced cargo schooners (Ericson 1969b:202; Barry 1996:107,109,131,148; Minnesota 2004). In addition to the efficiency provided by the consort system, propellers tended to become larger, faster, and more efficient during the last third of the 19th century. The increase in size was due to harbor and canal improvements and allowed the ships to operate at larger economies of scale making them cheaper per ton to man and power. At the same time, more powerful engines allowed them to travel faster and run more trips during the season, increasing from an average of 15 ca. 1855 to 22 ca. 1880 (Marvin 1902:403).

Many of the steamboats on the Great Lakes, especially prior to the American Civil War, were owned and operated in conjunction with railroad lines. It was not until ca. 1861 that railroads were completed along the north and south shores of Lake Erie and Lake Ontario. Prior to this time, the railroads needed steamers to meet their trains at the port and carry passengers down the St. Lawrence River and/or across Lake Ontario to make connections at the next depot. Most rail companies quickly realized that they benefited from the profits and control of these connections and so acquired fleets of vessels to meet their needs. The majority of these ships were side-wheel palace steamers, designed to carry not only the goods that made up train freight but also both high and low price passengers in the same sort of opulence and comfort that they had enjoyed on the train (Disturnell 1857:169-172; Heyl 1959:257).

The need for such steamers and their ultimate obsolescence grew from the activities of the Baltimore & Ohio Railroad, which was incorporated in 1827 and was the first commercial line for the transportation of passengers and freight. Within 25 years, Lake Ontario was linked to Boston, New York, and New England through the Northern Railroad (later Central Vermont system) at Ogdensburg. Oswego, Cape Vincent, Buffalo, and Chicago were all connected to the East during the 1850s. In Canada, after numerous false starts, the Guarantee Act of 1849 insured railway bonds and spurred railway construction. The Great Western Railway between Niagara and Toronto was completed in 1856; the Grand Trunk Railway connecting Montreal and Toronto was begun in 1853 (Pound 1945:323; Brown 1950b:239; Odle 1953c:165; Meinig 1966b:163; Mika and Mika 1972; Ten Cate 1982:107; Wood 2000:130,132,134-135; Holtham 2000 [1831]:xi). The purposes of these lines were first to connect the east with the production centers of the interior and then to connect points in the interior, much like the canals and inland waterways (Meinig 1966b:162; Mika and Mika 1972:14-15,19,26,89-99). In a twist of irony, the first locomotive in Toronto was delivered by a schooner in 1853 (Mika and Mika 1972:28). The arrival of this locomotive and of railroads in general at Lake Ontario closely coincided with the Depression of 1857 and hurt lake shipping. While the region recovered from the depression by 1860, the railroads remained a permanent challenge. After the American Civil War, railroads began to standardize gauges and connect lines, allowing for the through shipment of grain and other goods without the time consuming necessity of transferring cargo from one car to another. These improvements allowed railroads to command the package freight market, but left the ever-increasing bulk freight business largely untouched. The Grand Trunk Railway also drew traffic away from the St. Lawrence Canal by offering an alternative route to Montreal (Brown 1950b:239, 1951a:30; Odle 1953a:258-259; Gilmore 1957a:20-21; Meinig 1966a:172; Lenihan 1987:29; Davidson 1988:248). Additionally, trains drew high-class passenger traffic off the water, leaving lake vessels to transport primarily immigrants (Marvin 1902:399). As Winthrop Marvin (1902:129) put it:

> But the iron horse, their relentless enemy, gradually overpowered them. The steam trains of the east and west railroads could run throughout the year. They were not blocked by ice or tempest. They were swifter than the swiftest of the splendid lake ships. More and more railroads monopolized the high-class passenger traffic and left the sidewheelers only immigrants and a little way freight.

Trains had the advantage of operating year-round and allowed goods to be shipped directly from the depot to most market cities. An 1846 railroad prospectus claimed that a locomotive cost £145 to operate and carried 350 tons each way in 6 to 8 hours,

> …saving of cartage, wharfage and insurance, without twice handling of the goods, avoiding sea-sickness to passengers; and this it will do every day, both winter and summer, throughout the year; whereas, by Steamboat it costs £150 to convey 250 tons, requires a week to accomplish it, and this can only be done seven months in the year. (Anonymous 1846:23-24).

Between 1854 and 1860, 40% of the grain traffic from the Great Lakes made at least a portion of its journey by rail (Marvin 1902:399; Odle 1953c:165-166). Despite this competition, it was consistently cheaper to transport bulk goods by water. In 1868, it cost 25.3 cents to send a bushel of wheat from Chicago to New York City by lake and canal, while it cost 42.6 cents to transport it by rail. The same bushel cost 4.4 cents to ship by water and 10 cents to send by rail in 1900 (Francis 1986:262; Barry 1996:145). Lake and canal transportation retained most bulk trades, with the exception of flour, into the 20th century.

While the advent of the locomotive certainly damaged many trades on Lake Ontario, it also fostered new lake industries. During the mid-19th century, many shipyards were bolstered by the demand for commuter and excursion ships. Often these vessels were owned and operated by the rail lines and served as extensions of the railroads, carrying passengers from one depot to another on the opposite shore of the lake. For example, the ***Zimmerman*** was built at Niagara in 1853 for the Erie and Ontario Railway and served to extend their service between Erie and Niagara all the way to Toronto. Similarly, beginning in 1872, the Rome, Watertown & Ogdensburg Railroad operated a 400-passenger side-wheel steamboat from Cape Vincent to Alexandria Bay (Disturnell 1863:168; Pound 1945:322-323; Brown 1988:81-82). In later years, many rail lines also owned propeller ships for transporting grain, allowing them to control the shipment from beginning to end (Odle 1953c:166-167; Barry 1996:184).

The effect of rail on the vessels of Lake Ontario played out in other ways too. Malcolm Davidson (1988:249-251) has argued that as the need for steam lines to accommodate rail lines declined, Toronto merchants focused their attention on their northern hinterlands rather than compete with the Kingston-Montreal shipping axis. This reluctance to embrace steam navigation may be linked to the hesitancy that Hugh Richardson (1825) noted among Toronto merchants and resulted in heavy investment in railroads expanding north (White and Montgomery 1994:24). Hamilton followed a similar path, also investing in rail rather than steam navigation. The tension between these two modes of travel is clearly visible in an anonymous sketch map from 1860 that shows alternative paths for Hamilton and Toronto (Figure 6.5). In one portion of the map Hamilton is shown as a collection point gathering several railroads and transferring their

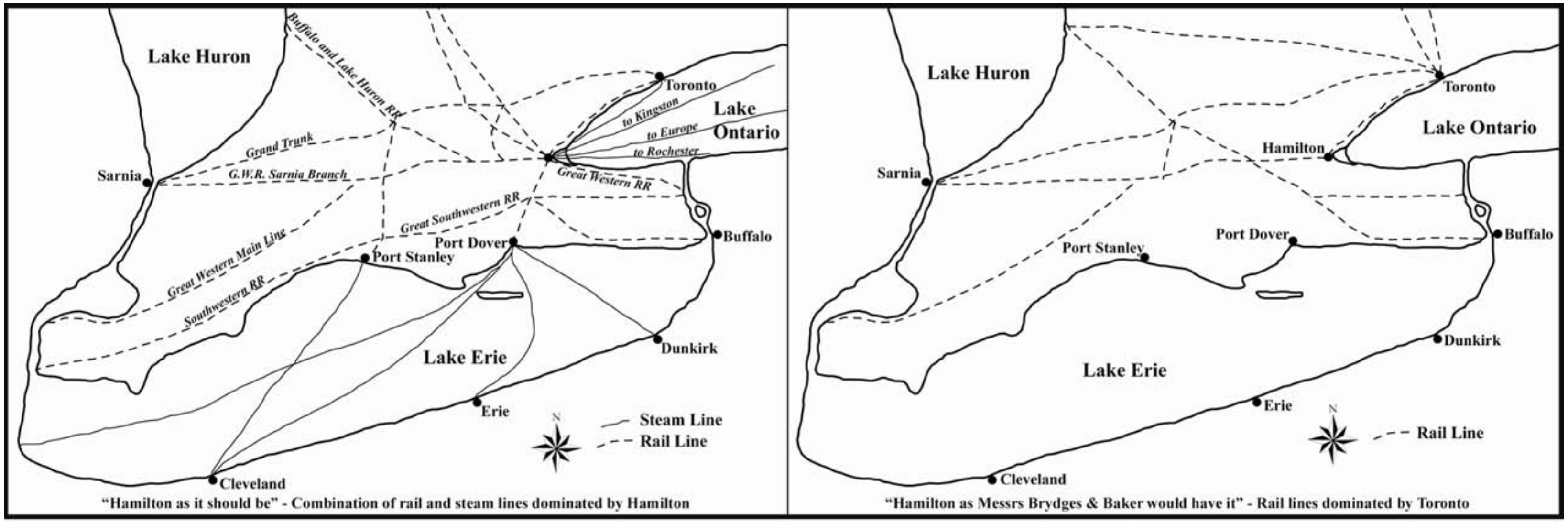

FIGURE 6.5. Sketch of alternative rail and steamboat routes in western Ontario as seen by merchants in 1860 (after Gentilcore and Head 1984:191).

cargos to steamers for shipment to Hamilton, Rochester, and Europe. In another part of the map, the alternative of Toronto and its rail system dominating regional trade to the exclusion of water transportation is depicted (Gentilcore and Head 1984:190). This sketch is an interesting window into the mindset of the period but neither of these scenarios was strictly followed. The decision by Toronto merchants to focus on rail, however, did have far reaching consequences and resulted in the city partly turning its back on the lake for the next five decades. Toronto city administrators were reluctant to invest in harbor facilities and ship owners did not invest heavily in specialized steel freighters, preferring to use older and often overloaded vessels during the early twentieth century (Davidson 1988:251).

The railroads not only influenced the harbors and ships of Lake Ontario but also had profound consequences for the landscape surrounding the lake. The railroads continued to divorce the transportation system from the natural environment. This process had begun with the canals and grade remained a primary concern in railroad construction; however, it was easier to power a locomotive up a slope than it was force water uphill. Consequently, railroads were better able to directly access centers of production over the most efficient route.

For approximately two decades, the canals and railroads coexisted and early railroads even acted as connectors for waterways and canals, but by 1870 railroads were the unquestioned transportation force in the region (Meinig 1966b:162). This transition began to realign the importance of towns. By the time the major rail lines were completed in the 1890s, no large town in the region was untouched by a railroad, and the same could be said for many villages. Those not directly linked to the rail system would remain small or diminish. In cases such as Kingston, the late arrival of the railroad changed the trajectory of the town and for Cobourg the loss of the railroad led to the decline of the town. The power of this system to control the fortunes of a community was not lost on local centers, which competed to draw the rails and their associated commerce away from their neighbors. Similar competition was going on at the regional and national scale, with major cities such as New York and Quebec trying to drain their interiors in the most effective way without loosing commerce to each other or local competitors such as Boston (Preston 1954:15; Young 1965:35; Meinig 1966b:162; McDowall 1975:62; Versace 2005). To a certain extent, the more politically powerful a group or municipality, the better connected it was to the rail system. Thus, much of the region's political landscape of the second half of the 19th century is preserved in the rail lines.

In addition to steam power, the other major revolution on the Great Lakes was the introduction of iron, and later steel, to hull construction. The first iron hulls on the Great Lakes were the British steam gunboat, *Mohawk*, launched at Kingston in 1843, and the USS *Michigan* assembled at Erie, Pennsylvania from 1842 to 1844. Four years later, the *Passport* and the *Magnet* were assembled on Lake Ontario from plates forged in Scotland for service on the Royal Mail Line. However, it was not until 1861 that the first widely acknowledged iron hulled commercial vessel was launched on the Great Lakes. In that year, the *Merchant* sailed from Buffalo (Pound 1945:322; Ericson 1969b:200; Ten Cate 1982:119; Ellis 1984:298; Barry 1996:59). Due to a few unfortunate accidents and a general mistrust of radically new technology, insurance companies and much of the maritime public opposed iron hulls. As a result, numerous composite vessels were built during the 1870s and 1880s. These ships had closely spaced iron frames with oak planking. The planking was covered with a sheathing of iron plates above the waterline. Eventually, this type of construction was surpassed by steel hulls ca. 1890. By the advent of the 20th century, tonnage of metal hulled vessels had surpassed those constructed of wood on the Great Lakes, but smaller wooden hulled vessels still dominated numerically, four to one in 1906 (Ten Cate 1982:119; Laurent 1983:13; Barry 1996:136).

The first steel vessels on the Great Lakes, the *Algoma*, *Alberta*, and *Athabasca*, were built in Scotland (1883), steamed to Montreal, and were then cut in two and shipped through the Welland Canal to be reassembled at Buffalo. Two years later, the first steel hull constructed on the Great Lakes, the *Spokane*, was launched at Cleveland. The elasticity of steel allowed these vessels to be safely built much longer than iron vessels. Steel ships reached lengths of 183 m by World War I and quickly began to push all other types of construction out of the cargo market. These vessels retained many of the design features of the ***R.J. Hackett***, such as regularly spaced hatches and forward mounted pilot houses. They also added double-hull construction for safety and hatches that extended nearly the entire beam of the vessel for easy cargo handling (Marvin 1902:407-408; Ericson 1969b:203; Laurent 1983:13; Ellis 1984:271; Barry 1996:137).

Steel hulls, steam navigation, and the railways all intersected in the Ontario Car Ferry Company. Designed to carry rail cars, car ferries loaded and unloaded them directly to and from tracks. They were employed at different locations on Lake Ontario, including between Kingston and Cape Vincent, to limit the amount of handling and transshipment needed to move cargos around and across the lake. During the early 20th century, the Grand Trunk Railway needed coal to fuel its locomotives; the Buffalo, Rochester, and Pittsburgh Railway had ready access to the coal fields of western Pennsylvania. The two railways developed the Ontario Car Ferry Company to transport cars of coal from Rochester to Cobourg, linking supply and demand, as well as terrestrial and marine steam. To that end the *Ontario #1* was launched in 1907, and eight years later the *Ontario #2* followed. Each ferry could carry 30 train cars, and, at 5,568 tons, the *Ontario #2* was the largest vessel on the Great Lakes when it was launched. In addition to carrying coal, the two ferries carried passengers, primarily tourists on short excursions, across the lake. Due to declining demand for coal the service was discontinued in 1950 (Howard 1950; Taws 1991; Rafuse 2000; Versace 2005). The use of Rochester and Cobourg for the car ferries is noteworthy because Cobourg was not endowed with a good natural harbor and Rochester focused much of its historic resources on the Erie Canal. However, the position of the these two ports almost directly across the lake from each other near the center of the north and south shores no doubt played a role in their selection, much as it did in the steamboat line that ran between the two towns in 19th century (Mackay 1845:16) and in the short-lived high-speed ferry that operated in the 2004 and 2005. In this way, once the commitment was made to cross the lake rather than circumnavigating it, the position of these ports equidistant from points east and west trumped their geographic drawbacks.

The 20th Century: Booze, Tourism, and the Decline of Sail

The Tourism Industry of Lake Ontario

The arrival of railways during the mid-19th century and the connection of Buffalo and Montreal by telegraph in 1847 brought the world to the Lake Ontario drainage basin (Wood 2000:129). Prior to this time many towns, especially inland towns, had been working in mutual isolation with only passing interest in their neighbors and the Eastern Seaboard. However, these new technologies brought outside news and information almost instantly. Not only was it possible to transfer grain prices and commercial news but also national events. Suddenly, lifelong denizens of the lakeshore were not just residents of Sackets Harbor or Oshawa: they were residents of the U.S. or Canada, as well. These new identities were superimposed on top of existing self-perceptions in local and lake-wide contexts.

The process also worked in reverse. Lake Ontario became much more real in the U.S. national consciousness; it had long been part of the Canadian heartland. The railways made a trip to the lake a relatively short and comfortable journey, and, once there, you were not far removed from eastern events, with news traveling quickly via the telegraph wire. With these developments, tourism and summer residency became a much more attractive option for the wealthy.

Like most trends along the lakeshore, tourism was not a wholly new development. The first private yacht on the lakes, the *Toronto*, was built in 1799 to entertain visiting royalty, and the Erie Canal opened the area to tourism before the arrival of trains. Intrepid tourists traveled up the canal, their fares partly balancing the overwhelming bulk of goods traveling the opposite direction. As early as 1834 (Anonymous) there were published guides such as *The Tourist, or Pocket Manual for Travelers*, many of which focused on the western end of the lake and Niagara Falls. The falls were the primary natural attraction of not only the region but also the nation during this period, and they were a must-see for all travelers exploring the newly opened interior. As Basil Hall (1829:177) wrote, “I do not remember an instance in America, or in England, when this subject was broached, that the first question has not been, ‘Did the Falls answer your expectation?’.”

The arrival of railways further opened the region and tour books such as ***Tourist's*** *Guide to Niagara Falls, Lake Ontario, and St. Lawrence River; also, A Guide to Lakes George and Champlain; Ottawa and Saguenay Rivers* began including lists of rail and steamboat connections, as well approximate lengths of journeys (Disturnell 1857). Trains and a growing local population allowed for larger contingents of tourists to enjoy the shore. For example, Grimsby Beach, east of Grimsby, Ontario, opened as a Methodist retreat camp in 1856 (Konrads 1963:27). Interest in the Lake Ontario region also seems to have expanded by this period to include the Thousand Islands region near the head of the St. Lawrence River, with that area receiving coverage in tour books and its own influx of religious camps. The arrival of trains and tourists also helped to revive some local areas. In the case of Clayton, New York rail seems to have provided a new opportunity as it was helping to steal an old. Increased access to railroads contributed to the decline of timber shipment down the St. Lawrence River, which had been a mainstay of Clayton’s economy since the 1820s. However, just as this industry was collapsing, the railway reached Clayton in 1873, and the town became a tourist destination not long thereafter. The influx of tourists not only boosted the local economy but provided employment for the local shipbuilding industry which had grown up around the timber business. While there was no longer a market for large wooden ships, many of the shipbuilders adapted to pleasure boat construction by the early 20th century (Wahl 1974:17,19; Anonymous [1970]).

As the turn of the century approached, the Gilded Age progressed, the middle and upper classes of the U.S. swelled, and Lake Ontario became an ever more frequent destination. The populations using the lake, however, seem to have become more distinct, a product of the wealth polarization that in part defines the Gilded Age. The middle class had access to hotels, amusement parks, dance halls, and pleasure excursions throughout the Thousand Islands region in places such as Alexandria Bay, New York and on the Niagara Peninsula. These experiences could be purchased piecemeal and generally at reasonable prices. For example, a pleasure cruise through the Thousand Islands from Kingston to Alexandria Bay and back cost $2.30 in 1900, equivalent to approximately $60 in 2007 (James 1899, 1900; Konrads 1963; Turcotte 1986; Parker 1994). On the other hand, the upper class built large houses on the Thousand Islands and purchased steam yachts and runabouts to travel through the islands. The investment was substantially larger: the Wyckoff Villa (Carleton Villa) on Carleton Island, for example, purportedly cost $30,000 to build in 1893, an amount equal to more than $745,800 in 2007 (Anonymous 1893). While this and other homes were not as grand as the Gilded Age mansions built in other locations such as Newport, Rhode Island, they were part of the same tradition of ostentatious display in striking natural settings. There were also differences in duration and permanence between the middle-class and upper-class vacationers in the Thousand Islands. The middle class came for a short visit and left very little evidence of their individual presence. Meanwhile the wealthy invested in substantial homes that they planned to inhabit for most of the summer months over several years or decades.

The Canadian shore followed a slightly different trajectory. While there were some hotels and grand estates on the north shore, most vacation properties were small cottages owned by families in surrounding towns. This difference is consistent with the heartland nature of the Ontario shore. The populations were closer so a trip to the shore was not such a major excursion; however, the recreation potential of the littoral was still appreciated and utilized.

The Great Depression (1929-1939) ended the fortunes of many families who had invested in great homes and caused a decline in the vacation industry in general, which forced most of the lake and riverside hotels out of business. In the following years, the vacation industry rebounded as families built small cabins along Lake Ontario and the St. Lawrence River. Many of these buildings were built in the 1950s, with a second surge in the 1980s, and are owned by middle-class families, often from the same geographic region. The second half of the 20th century also witnessed an increase in the number of motels and mobile homes along the lakeshore as less permanent vacationers returned to the region (Ten Cate 1982:229). The use of both small cottages and motels is associated with the widespread adoption of the automobile, which allowed for individual travel to individual vacation locations and did not require the mass-transit convenience of hotels near train depots or steamer landings. Today, much of the non-urban lakefront is taken up with small cabins and mobile home parks.

The End of Sailing Commerce

Total steam tonnage on the lakes surpassed sail tonnage in 1884 and for the next 50 years sailing merchant vessels slowly disappeared from Lake Ontario (Marvin 1902:412). While sailing vessels seem to have hung on slightly longer in areas such as Kingston, making up 31% of the arrivals there in 1900, the panic of 1873, continued competition from the railroads, and the McKinley Tariff (1890) all conspired to push sailing vessels off the lake (Anonymous 1876; Taws 1991; Moore 1995:17). Each of these events, combined with the growing efficiency of propellers, and the ever-increasing size of canal locks, which allowed passage of steel vessels that dwarfed the largest structurally feasible wooden ships, put an additional nail in the coffin of sail. However, sail did not suddenly disappear from the lake, nor did individual schooners; instead it was a stepwise process for both the ships and the type.

Sailing ships first drifted into less-desirable bulk trades. Each vessel had an insurance rating determined by its age, condition, and construction. These ratings, in turn, determined what types of cargo the vessel could haul. Grain, the most lucrative cargo, required a higher rating then stone, lumber, or coal. These ratings were not a matter of snobbery, reserving the best cargos for the finest ships, but were based in economic and safety concerns. The schooner *Sophia* demonstrated early on the dangers of transporting grain in a leaky vessel. While traveling the lake in 1827, the grain in its hold became wet and began to expand, causing the vessel to burst at the seams. The entire crew was lost except the captain who paddled 7 km to shore grasping a cabin door (Van Cleve

1877:111; Palmer 1999:51). The chain of events, then, for schooners was simple: declining revenues during lean years or as a result of completion from steamers meant less money for upkeep, which led to a reduced insurance rating and changes in cargo.

On the Great Lakes in general carrying stone and lumber seem to have been common last cargos for many schooners. However, on Lake Ontario stone-hooking and coal hauling were particularly widespread. Stone-hooking is the harvesting of natural stone from the lakeshore for construction and was particularly prevalent along the north shore. The process involved collecting large stones, called “hardheads,” with a two-pronged rake and raising them into a smaller vessel, often a scow. Once the scow was filled the stones were transferred to the schooner and sailed to where a wharf was under construction. This was back-breaking labor and caused substantial wear on vessels. However, it involved collecting and transporting otherwise worthless stones and could be undertaken in schooners no longer fit for any other trade. In a cruel twist of irony, it also directly involved schooner captains in the construction of wharves, harbors, and breakwaters for the very steamboats that were driving them from the carrying trades (OCMA 1985b; Taws 1991). For U.S. registered vessels on Lake Ontario, the coal trade was often their last option (Anonymous 1926; Williams 1955; Ericson 1969a). No longer able to compete in the inter-lake trade, coal was the only bulk commodity regularly shipped between Lake Ontario ports during the 20th century. Sails by 1900 were as a rule “grimy, because of the soft coal almost universally used on the lakes. The only real ‘white wings’ ever observable on the lake horizon are those of pleasure yachts” (Marvin 1902:406).

The coal-hauling schooners, however, were at least still schooners. It was common to rebuild vessels that could no longer make a profit as barges. A schooner would have all but its lower masts removed, its hull reinforced, and tow bits installed, as well as possibly opening larger hatches in its deck. Then the schooner would be towed in consort with a handful of other barges behind a steamboat. This system made the steamboat more efficient, carrying the maximum possible cargo for the fuel it burned, and provided a final occupation for many once-independent schooners.

In 1916 there were 162 sailing commercial vessels on the Great Lakes. In 1928 the *Lyman M. Davis* and the *Julia E. Merrill* were the only commercial schooners still on Lake Ontario. Three years later they were no longer in service. Both of these vessel met a fiery end as a public spectacle off of Sunnyside Amusement Park near Toronto, the *Merrill* in 1931 and the *Davis* in 1934 (Anonymous 1928; Palmer 1990:10; Kohl 1994:222-223).

Sail was not alone in declining during the late 19th century. Great Lakes shipping peaked in 1893 with a combined U.S. and Canadian fleet of 3018 ships (Carter and Prince 2003:4). After that date there was a decline in the numbers of both steam and sail. Many steamboats also ended their days as bulk carriers, either under their own power or converted to barges (Armstrong 1948:157-158; Rodgers 2003:8). Today the number of ships on the Great Lakes is greatly reduced from a century ago, with a few massive ships traveling through the lakes and out the St. Lawrence Seaway replacing the large numbers of smaller vessels. However, bulk cargos of iron ore, grain, and potash still remain the backbone of the lake trade.

Rum Running

Just as the 1807 Embargo led to smuggling across the international border, Prohibition allowed illegal trade to prosper on Lake Ontario. Both the 19th and 20th century smuggling drew on preexisting relationships and networks among merchants, farmers, and boat owners to move cargo and make a profit. The flow of goods, however, was not as simple with rum running as it was with smuggling. U.S. Prohibition ran from 1920 to 1933, but Canada also experienced Prohibition at both the national and provincial levels. All of Canada was dry from the spring of 1918 until the end of 1919, while Ontario had various temperance regulations from 1916 to mid-1927. These regulations ranged from limiting the potency of alcohol available to banning its importation and exportation (Turcotte 1986:27; Hunt 1988). As a result, there was rum running in both directions on Lake Ontario taking advantage of various legal loopholes and local needs, as well as alcohol being smuggled into Ontario from other provinces.

Nevertheless, the majority of alcohol seems to have flowed from Canada to the U.S., especially after Canada and then Ontario lifted their bans. In response to the increased availability, the U.S. Coast Guard stationed patrol boats on the Great Lakes. *CG-121* was stationed at Sackets Harbor and was charged with monitoring the northeastern portion of the lake. This vessel, and the others like it, could stay on the water for a week, allowing it to move freely and surprise bootleggers. In general, it acted to support the shorter-range picket boats that went out nightly but had to return to port each day (Hunt 1988:42,163-164,235).

As a result of ever-changing laws and methods of enforcement, rum running on Lake Ontario took many forms and numerous routes. Norm Conley of Wolfe Island, for example, was a rum runner from 1923 to 1933. During his decade-long career he ran alchohol by car, rowboat, motor launch, steamboat, and airplane, traveling as short a distance as from Wolfe Island to Cape Vincent (2 km) and as far as to Syracuse, NY (120 km) (Hunt 1988:174-175). Similarly, the routes taken by rum runners seem to have shifted as the need arose, but Prince Edward County was a major source (Figure 6.6).

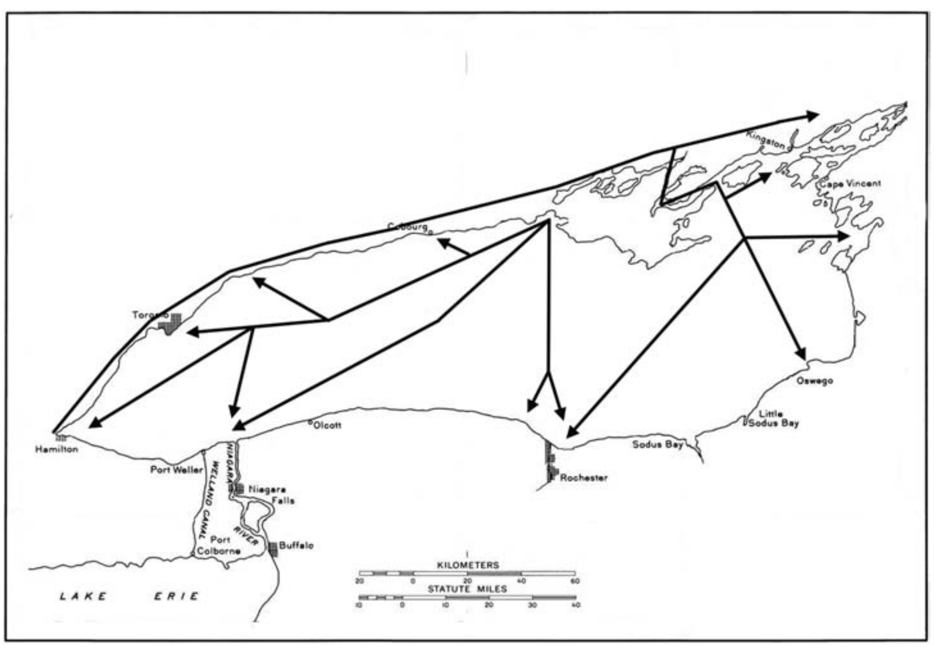

FIGURE 6.6. Lake Ontario rum running routes.

Alcohol either left the west side of the peninsula heading to rendezvous near Toronto, Hamilton, Cobourg, Rochester, or Niagara, or left via the Bay of Quinte to be landed near Oswego or Sackets Harbor (Hunt 1988). Unfortunately, as an illegal trade, there were very few official records left by the rum runners. Much of what remains is folklore, often to give greater mystery to a piece of land or increase the price of an old boat for sale. Rum running, however, was the last of the locally-dominated trades that relied heavily on nearshore navigation and a wide-range of landing sites. Whereas the steel bulk freighters of the 20th and 21st centuries were and are conspicuous aspects of the seascape of Lake Ontario, the rum runners were imbedded in the landscape. They relied heavily on local knowledge and their stories are ingrained in landmarks, making them more closely related to the small schooners of the early 19th century than to the cargo ships of their own century.

CHAPTER VII

PLACE NAMES: SIGNIFIERS OF INTENT, USE, AND PERCEPTION

> What's in a name on the land? Quite a lot: a kind of index of history, a revelation of men's reaction to the land, a statement of what they did with it, what it did for them or *to* them, or where they wished they were, instead … (Ellis 1974:242).

Introduction

Part of the landscape experience is sound, the noises and voices that populate the space. These are obviously very difficult to reconstruct and changed not only seasonally but hourly. However, part of these sounds would have been the language of the place, what things were called and how they were described. Some of this language can be reconstructed from historical records and informant interviews, as Kenneth Pott (1994) has done for the Great Lakes, but it is also accessible through place names. The study of place names, formally known as toponymy, provides insight into a society's attitude towards a place as the name transforms the physical and geographical reality into something that is historically and culturally experienced (Taylor 1978; Tilley 1994:18; Ash 2005:57; Van der Noort and O'Sullivan 2006:86; Gropas 2007:531).

Despite Isaac Taylor's (1978:392) claim that place names in North America were simply laid on the land without proper historical or cultural development, the toponyms recorded on maps of the Great Lakes do offer a record of the region's social and economic history. These names reveal "a curious medley of names derived from Indian sources, salient geographic scenes or economic accident, historical association, religious fervor, Old World memories, expediency, or plain lack of imagination on the part of the early explorers, trappers and settlers" (Wallis 1958:16). Furthermore, toponyms are not static and changes to them provide information about the priorities of different cultures or shifting interests within a single culture. For example, what is now the Province of Ontario has been reformed and renamed several times in the past 220 years. Initially part of Quebec, Upper Canada was divided from Lower Canada in 1791 to streamline administration and to give Loyalists moving to the region the benefit of English law instead of the French civil law promised to Quebec in the 1774 Quebec Act. The designation of “Upper” and “Lower” Canada is also significant in that it points to the importance of the St. Lawrence River to the British, with the flow of the river trumping the generally boreocentric British worldview. Additionally, these toponyms were not new but were adopted from the French who referred to the region as “Haut-Canada” or “Le Pays d’en Haut” (Mika and Mika 1985:248). The preservation of the French names in translation is interesting given that the British were at the same time systematically erasing Francophone designations from the landscape. The implications of this overwriting will be discussed below. When Upper and Lower Canada were merged into the United Province of Canada with the 1840 Act of Union, a new name was assigned to the region, “Canada West.” This change was associated with a continued administrative distinction between the former provinces but severed many of the political connotations of “Upper Canada.” A similar distinction was made when Ontario once again became an independent province and was given its modern toponym as a result of the 1867 Dominion of Canada (Ten Cate 1982:116). Each new political division in Canada required a renaming of its principle parts to mark the changes in administration on the national landscape.

While the progression of provincial names is relatively straightforward, the interpretation of toponyms can be troublesome. The name of Lake Ontario is probably the clearest example of these difficulties. The first documented use of “Lake Ontario” dates to 1656, when Nicolas Sanson d’Abbeville referred to the lake as “Lac Ontario ou Lac de St. Louis” on his map *Le Canada ou Nouvelle France* (Mika and Mika 1985:251). Sanson was clearly cautious in his naming of places, which, given the uncertainty of the period, was probably wise. The lake had been referred to as “Cataraqui” (“Cataracqui”), “St. Louis,” “Frontenac,” “Iroquois” (“Irecoies”), and “Untararie.” These toponyms reference the Native Americans who lived in the area, Native American place names important to the French, and important French individuals (O’Callaghan 1854). The name “Ontario,” however, stuck, possibly because the French found it to be a usefully vague term that did not link the lake to a specific group, person, or other place. As early as the 17th century, the French were unclear as to what the name meant. Governor Dubois D'Auagour stated in 1663 that *ontario* translated as "beautiful lake," but less than a decade later a new governor, Daniel de Rémy de Courcelle, believed that "great lake" was a better translation. Courcelle also attributed the name to the Huron, rather than the Iroquois, possibly reflecting his war with the Iroquois (O'Callaghan 1855:16,76; Barbeau 1961:112). The "beautiful lake" interpretation remains the dominant hypothesis today, possibly because of its positive connotations and the absurdity of naming the smallest Great Lake "great lake." Other translations, however, still cling to the lake. Research by Richard Wallis (1958:17) suggested that *ontario* may also mean "beautiful prospect of rocks, hills, and water" or "village on the mountain." Assuming that the French adopted a Native American term, each of these various translations produces very different interpretations of the Native American description of the place. Without certainty regarding its origin, interpretation of the toponym is impossible beyond the relatively weak statement that both the French and British respected the original inhabitants of the region enough to attach a Native American name to what was at the time the most significant of the Great Lakes.

Names on the Land: Events and People

Several toponyms on Lake Ontario and the St. Lawrence River derive from significant events. These names essentially freeze time, tying a geographic place to a single event in perpetuity. The event is thereby carried into the present to serve as a warning or memorial. For example, Lost Channel in the Thousand Islands was named by the crews of British vessels lost in the maze of islands on 7 August 1760 (Ten Cate 1982:22). Modern charts and GPS have made navigation this area relatively simple, but the name remains as a reminder of the recent past when the Thousand Islands were a daunting navigation hazard and local knowledge was the only means to navigate them (Burleigh 1973:90-91 provides a primary account of being lost in the Thousand Islands).

Shipwrecks also gave their names to specific locations. Grampus Bay, near Oswego, was named for the British lumber schooner ***Grampus***. beached there in 1846 (Anonymous 1945; Alford 1957). Similarly, a point of land near Grenadier Island was formerly known as "Lady Gore Point" after the British lake schooner taken by the Americans during the War of 1812. John Bedford (1998:12) believed that the ***Lady Gore*** (also known as the ***Bella Gore***) was eventually burned while at anchor off the point and formed an artificial reef on which he and his father fished during the 19th century. This toponym is no longer used and it is not clear that the ***Lady Gore*** was lost in this location; however, the attribution of the name to the wreck does show the influence of the War of 1812 on the memory of local inhabitants.

Other more distant wars also influenced Lake Ontario toponyms. Several Spanish names appear on the Great Lakes, including the town of "Mexico" and "Mexico Bay" on Lake Ontario. While these appear to be anomalous names, the associated villages were universally founded during or immediately after the Mexican-American War (1846-1848) (Ellis 1974:253). These toponyms derive not from local episodes but from events half a continent away. The use of names from a foreign war, concurrent with the introduction of the telegraph and railroads to the region, is indicative of the effects of improved communication and an expanded sense of nationhood on the settlers of northern and western New York.

Many other places took their appellations from locally significant individuals, who named them either by right of control or ownership. For example, James Le Ray, named Cape Vincent, Alexandria Bay, and Theresa after his three children and Plessis for his dog (Ten Cate 1982:69-70; Bonney 1985:25). In the case of Cape Vincent, this family name replaced the earlier and more descriptive "Gravelly Point."

Changing Place Names, Overwriting History

Because each culture creates its landscape in its own image, when cultures collide so do their landscapes and their interpretations of shared landscapes. Toponyms record such conflicts and the successive waves of settlement in the Lake Ontario region

(Taylor 1978:25; Hardesty 2000:177). Through right of control and record keeping, each culture around Lake Ontario reworked the toponomic geography to fit their needs and perceptions.

John Richards (1990:174) has argued that "early modern Europe began to name the world, and in so doing, to appropriate the World as object." This pattern was certainly true for much of the world during the period of colonial expansion, with Europeans staking claims by the imposition not only of European order but also of European toponyms. Physical and cultural ownership bolsters the legitimacy of new names but requires control to the general exclusion of others. The lack of ultimate control may provide part of the explanation for why the French preserved so many Native American place names on Lake Ontario, often transliterated by Jesuits. The inability of the French to dominate Lake Ontario, combined with their reciprocal relationships with Native Americans and their transitory use of the landscape, likely resulted in less need or desire to assign French toponyms to geographic locations where Native American names already existed.

In addition to the transliterated Native American toponyms, the French missionaries bestowed the names of saints to many locations reflecting their desire to imprint Christianity onto the landscape. Conversely, many of the names given by voyageurs referred to "Hell" and the "Devil." Many of these places were dangerous or forbidding, but others appear relatively benign and may reflect the rough lifestyles and dark personalities of some voyageurs rather than any characteristic of the landscape. Many other toponyms, both French and Native American, derived from descriptions of the geography, water, or biology of a place. *Detroit* means "the straight," for example, and *nipissing* is "in the shallow water" (Barbeau 1961; Ellis 1974).

Few French toponyms, however, survive today on Lake Ontario because the British systematically erased them from the landscape. Governor John Graves Simcoe understood that the loss of traditional toponyms deprives the surviving members of part of their cultural identity and so made it a deliberate policy to remove French, and to a lesser extent Native American, names from the landscape (Dawber 1998:87; Hardesty

2000:179). This was the period when “Presque Isle” became “Erie” (PA), “Isle Royale” became “Chimney Island,” and “Oswegatchie” and “Fort de La Présentation” together became “Ogdensburg” after Samuel Ogden the American proprietor. “Frontenac” was the only French toponym in Ontario to survive this geographic pogrom, while French names persisted in Quebec (e.g. Montreal and La Chine) (Ellis 1974; Cooper 1980 [1856]:6). British rewordings of French names, occasionally based on Native American names, led to interesting and often meaningless derivations. For instance, “Cap d’Espoir” (“Cape Hope”), the name of a headland on the lower St. Lawrence, misunderstood by the British, became “Cape Despair” (Barbeau 1961:113; Ellis 1974:249). In later years, some earlier toponyms were restored; for example, York was renamed “Toronto” in 1834. Similarly, Skae’s Corner, named for Edward Skae, an early property owner, postmaster, and magistrate, was renamed “Oshawa,” an Ojibwa word that translates as “the crossing between water” or “the point at which the canoe was exchanged for the trail" in 1842. Both translations are appropriate for a traditional portage point such as Oshawa. At approximately the same time Annis Creek, which took its name from Charles Annis a miller and shipbuilder who settled in the area in 1793, became known as “Oshawa Creek” (OCMA 1985; Plumbe 1997). This kind of re-applying of native terms suggests that Native Americans were no longer considered a threat to the European populace or to their ownership of the landscape.

Place Names within the Survey Areas

Many of these patterns are evident in the toponyms associated with each of the survey areas. An analysis of past and present names for the bays and points that make up these areas will serve as an introduction to both the history and geography of the survey areas, which will then be taken up archaeologically in the following chapters (Figure 7.1).

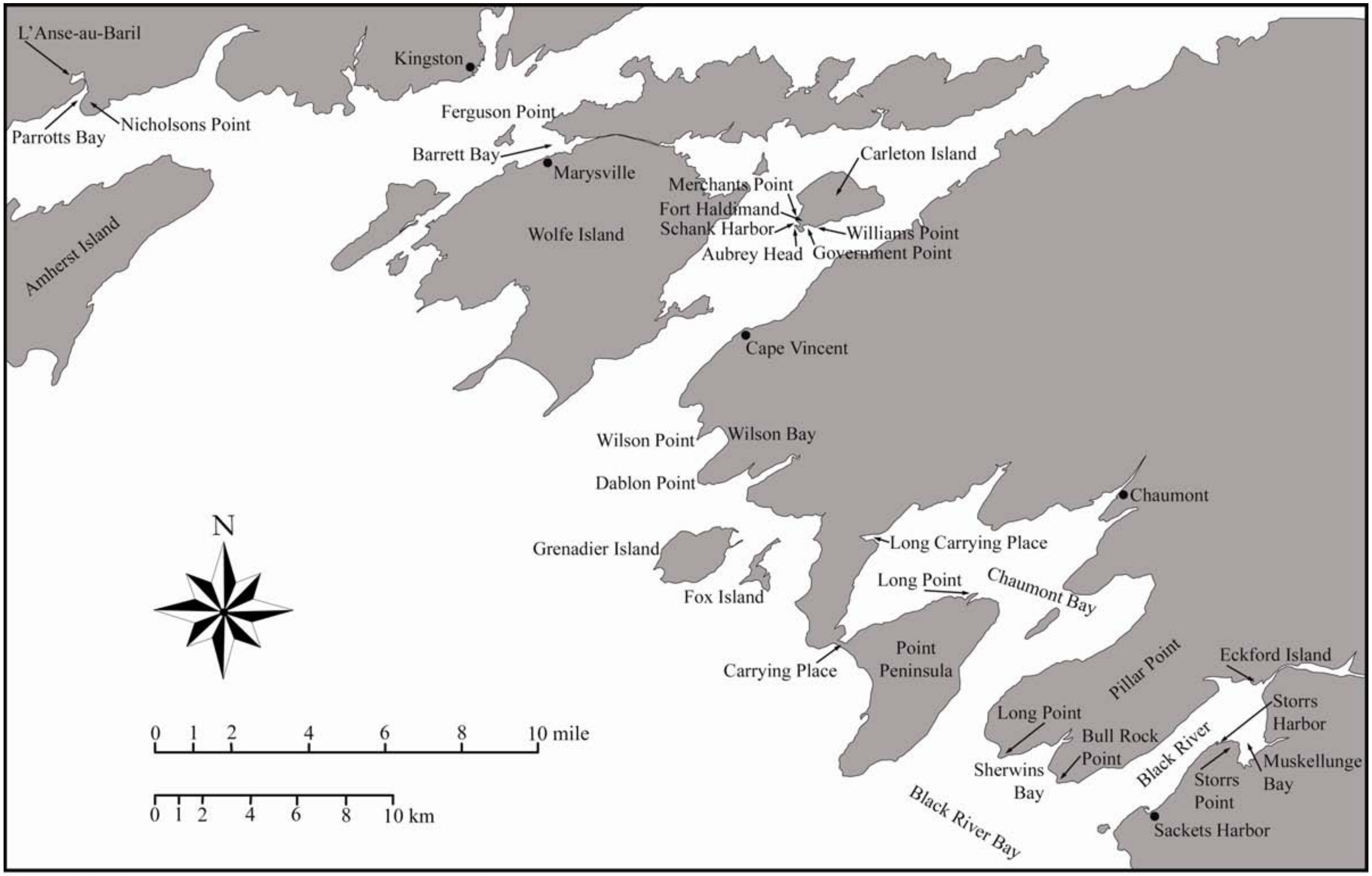

FIGURE 7.1. Toponyms associated with the survey areas.

Parrotts Bay

Parrotts Bay, situated on the Bay of Quinte west of Kingston (Burleigh 1973:131-132), takes its name from the Loyalist Parrott Family, James and his wife Marie as well as James' brothers John, who settled west of the bay beginning in 1784. During the French period, the bay was known as "L'Anse-au-Baril" ("Barrel Cove") (Burleigh 1966:74; Dawber 1998:87). The name "Barrel Cove" may have referred to shape of the bay, although the resemblance is not clear on early maps. Clearer, however, was the intent in renaming the bay. The Parrotts were instrumental in the development of Ernestown (Bath) farther to the west and they did not settle directly on the bay. The shores of the bay, in fact, remained unoccupied during the first wave of Loyalist settlement (Kotte and Peachey 1784). It was more common on Lake Ontario to draw names from families who owned or were directly involved with a landscape. In an effort to erase the French from the landscape, the British tugged the name of prominent early settlers over to an otherwise uninhabited area.

The name for the point that bounds the eastern margin of the bay, "Nicholsons Point," is more closely tied to the land. C. N. Nicholson owned the entire point during the mid-to-late 19th century (Meacham 1878). Nicholson appears to have lived along the Bath Road rather than on the point, but he likely developed the land for agricultural production.

Wolfe Island

Wolfe Island takes its name from James Wolfe, the British leader at the Plains of Abraham (Battle of Quebec, 12 September 1759), a pivotal battle in the French and Indian War. This name replaced the earlier honorary French "Isle Buade" after Louise de Buade Frontenac, and the descriptive French "Grande Isle" and Native American "Ganounkouesnot" as part of the British effort to claim the Lake Ontario landscape, although it was also occasionally referred to as Long Island well into the 19th century (Ford 1836; Storer 1862; Owen et al. 1863; Marshall 2000:19). The use of Wolfe's name had more to do with memorializing him with a major island than any connection between Wolfe and the place.

Specific to the survey area are the toponyms of “Barrett Bay,” “Ferguson Point,” and “Marysville,” all associated with locally prominent individuals. “Barrett Bay” takes its name from George Barrett, a local property owner who operated a mid-to-late 19th-century flour mill just east of the Keyes House, Annis Dock, and Keyes Wreck, discussed in the next chapter (Chewett 1822; Meacham 1878). Ferguson Point, the north boundary of Barrett Bay, was named for John Ferguson, who owned the point during the first quarter of the 19th century (Chewett 1822; Anonymous 1823). Mary Hitchcock (née Hinckley) gave her name to the town of Marysville. Born in 1789 on Wolfe Island, Mary served as the postmistress for several years and was related by birth and marriage to the locally prominent Hinckley and Hitchcock families, both of which were heavily involved in island commerce and ferries (Cosgrove 1973:17; Hogan and Smithson 1982:492). The names associated with the Wolfe Island survey area were applied to the landscape throughout much of the late 19th century and generally demonstrate a strong local attachment to and definition of the place.

Carleton Island

The naming of Carleton Island is one of the more confusing episodes in the transition from French to English dominance on Lake Ontario. The island was officially named “Carleton” in 1778, but the British previously knew it as “Buck Island” or “Deer Island”. This animal appellation purportedly derived from the French name for the island but was in fact a misunderstanding of the French name, “Isle aux Chevereaux” (“Goat Island”). Complicating the situation, the French referred to nearby Grenadier Island as “Isle aux Chevreuils” (“Buck Island” or “Deer Island”). The French and British “Deer Islands” were distinct but separated by only 13 km. The distinction becomes important because both Grenadier and Carleton islands were rendezvous and camp sites during the historic period. Count Frontenac stopped at Isle aux Chevreuils (Grenadier Island), while Colonel Barry St. Leger camped at Carleton Island (Deer Island). The British recognized their mistake in naming the island by 1778, but were presumably consistent in referring to Carleton as “Buck Island” or “Deer Island” prior to then (Durham 1889; Casler 1906:33-34).

The name “Carleton” was taken from Guy Carleton, governor of Quebec and British commander in chief of North America during the American Revolution. Similarly, the fort constructed on the island at this time, Fort Haldimand, was named for Sir Frederick Haldimand, who had just recently been appointed governor of Quebec. Thus, the island was named for the outgoing Governor and the fort for the incoming Governor. Other place names went to locally important military officers. Schank Harbor was named for Lieutenant John Schank, a capable officer and shipbuilder who was in part responsible for the selection of Carleton Island as a naval base and constructed the dockyard there. He commanded the 19-gun ship ***Inflexible*** at the Battle of Valcour Island on Lake Champlain (11 October 1776) and, when assigned to Lake Ontario, snowshoed from Montreal to Niagara to see the land and take stock of the pine and oak stores (Pound 1945:98; Smith 1997:14-15; Malcomson 2004:25,32). Schank was also responsible for introducing the drop-keel, a precursor of the centerboard, to European craft in 1774 (Durham 1889:70; Chapelle 1935:166; Marquardt 2003:121-122). The point of land enclosing Schank Harbor was called “Aubrey Head.” While naming the harbor after Schank was almost certainly an honor, the name of the point may have been an insult. Arthur Smith (1997:22) argues that Captain Thomas Aubrey, commander of the 47th Regiment of Foot, was a difficult man who often quarreled with the other officers, a claim supported by primary documents (Casler 1906; Gibson 1999), and that the attachment of his name to this somewhat penis-shaped piece of land was not likely flattering. The other point of land that makes up the T-shaped head of Carleton Island was historically known as “Government Point,” a name it shared with the bay it enclosed. Today, Schank Harbor and Government Bay have been have been renamed “North” and “South,” after the directions in which they open. These toponyms were in use by no later than 1889 (Marr 1987). The island-side points that define these bays remain today unnamed. However, during the Revolutionary War period, the east side of Schank

Harbor was known as “Merchants Point,” and during the late 19th century the east side of Government Bay was known as “Williams Point” (Casler 1906:46,126; Marjorie Crothers 2008, pers. comm.). Merchants Point took its name from Merchants Cove, the small bay immediately east of the point used by the sutlers and merchants who served the fort and camp. Williams Point seems to have gone unnamed during this period and took its toponym later, from the Williams Family, early Gilded Age residents of the island.

In summary, modern Carleton Island has a mixture of toponyms spanning approximately 100 years. As a naval base, its primary geographic features were named for military officers and commanders with the importance of the space corresponding to the prominence of the man. It is also fitting that the harbor took Schank’s name since it and Aubrey Head were his primary domain. Government Bay was also claimed by the British by its name, but its secondary importance as a harbor may explain why it received a generic name rather than that of another dignitary. These names, however, all contrast with Merchants Point and Cove. The place of the merchants was set aside from that of the government installation. The historical record supports this distinction: a letter from Haldimand, dated 29 April 1779, states that merchants were to be kept separate from the fort and were to keep their establishments on the low ground near their cove so as not to interrupt the fort’s field of fire (reproduced in Casler 1906:46; Gibson 1999:45). However, with the end of military occupation on the island, the need for many of these names declined, causing places to be renamed for convenience (North Bay and South Bay), given names for personal satisfaction (Williams Point), or lost their names altogether (the former Merchants Point). In this way, the current toponyms of Carleton Island summarize much of its past.

Wilson Bay

Wilson Bay is bounded to the north by Wilson Point and to the south by Dablon Point. The name of the bay and the point were derived from S. Wilson, who owned property near the head of the bay during the mid-19th century (Stone 1864). “Dablon

Point" is slightly more interesting because this name was not assigned until the late 19th or early 20th century (USGS 1944). Prior to that time it was referred to as "Van Schaick Point" after the Van Schaick family that owned property around the bay, including N. Van Schaick, who had a house on the point (Stone 1864; Robinson 1888). This connection with the early settlement of the region was erased in favor of an earlier, more dramatic, but far more fleeting event. In March 1656, Jesuit Reverend Claude Dablon was traveling towards Montreal with a party of converted Native Americans and, attempting to land at or near the point, lost three companions. The growing interest in Jefferson County history and availability of the ***Jesuit Relation*** during the late 19th century no doubt fueled this toponymic transition, as did local interest. A memorial to Reverend Dablon was erected on the point by a local property owner in 1939.

Long Carrying Place

The toponyms surrounding Long Carrying Place appear to have been more stable. The name "Long Carrying Place" has been applied to the inlet since at least the mid 19th century (Stone 1864). This name is derived from the portage route that began and ended here. From Long Carrying Place it was approximately 1.6 km overland to a small bay near the mouth of Fox Creek, tucked safely behind Fox and Grenadier islands. The modifier "long" was applied to the name to distinguish it from the Carrying Place portage point where Point Peninsula is the narrowest (50-100 m) and which had borne that name since the late 18th century (LaForce 1789). Given the antiquity of both "Carrying Place" names and their association with indigenous travel routes, it is tempting to attribute them to a direct translation of a Native American name or at least an early European observation of Native American practice, but without 17th-century evidence this is a difficult argument to make.

The name "Point Peninsula" has also long been attached to the isthmus and head of land that extend southwest from the mainland into the lake, although the name originally referred only to the most lakeward point of land, literally the point of the peninsula. By 1815, the toponym was being applied to the entire head beyond the isthmus and colloquially to the head and the peninsula leading to the isthmus (Vidal 1815; Ford 1836). The name "Point Peninsula" is also interesting from an archaeological and ethnographic perspective. William Ritchie (1965) defined the Middle Woodland Period Point Peninsula archaeological culture based on a site that he excavated near Long Point (named for its physical shape) on the northeast shore of Point Peninsula. As defined by Ritchie, this culture dominated much of the Middle Woodland Period in northern New York and southeastern Ontario. Additionally, a group of Native Americans known colloquially as "Point Peninsula Indians" inhabited the region during the 19th and early 20th centuries. This group, likely of Algonquin stock, traveled to Wolfe Island in the summer to harvest reeds and spent the remainder of the year on the peninsula (Bruce Horne 2008, pers. comm.). Thus, the place name is applied to two culturally and temporally distinct Native American cultures, whose primary connection is having inhabited the same location. The name of the place was assigned by Europeans based on its physical characteristics before being applied by Americans and Canadians to identify Native Americans who lived there. In all cases, the Anglo terms have overwritten the French and Native American ones. The French may not have specifically named the peninsula, as it is generally poorly represented on their maps and they were far more interested in naming islands and other easily identifiable seamarks. There is some indication, however, on the 1757 Pierre Boucher de Labroquerie map that the peninsula was referred to as "Black," after the surrounding bay (Mika and Mika 1985). The Native Americans, however, certainly had names for themselves and their landscape, of which we no longer have good record. One inkling of these names comes from a 1670 French map that labels the entire shore of what is today "Black River Bay" and "Chaumont Bay" as "Kahenqsetta," likely a French transliteration of the Native American toponym (Gentilcore and Head 1984:Map 1.14).

Chaumont Bay was named for Vincent Le Ray de Chaumont, who owned much of the land in the area. The name seems to have been assigned not long after Le Ray purchased the land and appeared on maps as early as 1816 (Owen). The name was also shared by the principal settlement on the bay and was eventually applied to the primary river that feeds the bay, and which runs adjacent to the town. Prior to being associated with Le Ray, the bay was generally perceived as a northern lobe of the larger Black [River] Bay (Baye de Niaoure [Noir]) (Mika and Mika 1985).

Sherwins Bay

Sherwins Bay indents the end of Pillar Point. The bay takes its name from Sally Sherwin and her husband Azariah, who settled near the bay ca. 1802 (Lee 1989:5). North of the bay is Long Point, the point of land farthest from the mainland, likely giving the place its name (Stone 1864; Robinson 1888). South of Sherwins Bay is Bull Rock Point. Its name appears by the last quarter of the 19th century (Comstock 1877; Robinson 1888). The origins of this name are unclear but may relate to a bull-shaped rock formation near the point. The toponym of the entire landmass, “Pillar Point,” is more directly related to rock formations. The cliffs along the north side of the point eroded to form a series of pillars (Lee 1989:5). This toponym seems to have been attached to the point early during American settlement of the region and is further evidence of how important water transportation was prior to the modern period. The pillars were easily visible only from the lake. Nevertheless, use of the name was not unique to sailors.

Storrs Point

Storrs Point is situated on the south shore of the Black River, which gives its name to the bay that also bounds the west and south sides of Pillar Point. Black River Bay was also labeled “Hungry Bay” on many 19th-century maps. John Stevens (2007) has recently shown that this name was a mislabel, derived from the French “La Famine,” given because of Governor Febure de La Barre’s loss of men to sickness and hunger along the Lake Ontario shore in 1684. “La Famine,” however, properly applies to the mouth of the Salmon River and was transferred to Black River Bay due to poorly drawn maps and hearsay cartography. Due to its dark brown color, caused by the tannins leached into the water as it flows towards the lake, the French began calling the bay

"Baye de Niaoure [Noir]" by the 18th century, and the name and color have persisted to the present (Mika and Mika 1985).

Storrs Point and the harbor it forms both take their name from Lemuel Storrs, who, along with Henry Champion, owned much of the surrounding area. Use of these names seem to have been in effect by the early 19th century and Storrs Point was used to describe the naval shipyard located there during the War of 1812 (Gibson 2005). It is not clear if "Storrs Harbor" applied to the entire body of water behind the large point or if it pertained only to the water protected by the spit of land that protrudes from the north side of the point (Vinton 1829; Robinson 1888). Following the war, the names for the point and harbor began to shift. By 1829, only the point immediately adjacent to the naval shipyard was referred to as "Storrs," while the larger portion of the point came to be referred to as Whitefish Point (Vinton 1829). Following the fish theme, by the 1840s the point came to be known as "Catfish Point" (Camp 1844). This toponym persisted until at least the 1930s, although some maps continued to label the locale "Storrs Point," which became the official name again by the 1940s (Anonymous 1877; Robinson 1888; Anonymous 1936; USGS 1944). The name of the bay behind the point and the creek that feeds it stabilized more quickly, appearing as "Muskanonge" on an 1829 chart and continuing under various spellings; today it is known as "Muskellunge" (Vinton 1829). Muskellunge (musky; *Esox masquinongy*) and catfish (*Ictalurus punctatus*) were likely available within the muddy waters of the bay, while the short-lived reference to whitefish (*Coregonus clupeaformis*) likely referred to the abundant and economically important catches that occurred closer to Pillar Point.

With the exception of a fleeting reference to Henry Eckford in Eckford Island, a no longer extant island near the mouth of the Black River (Stockton 1836), Storrs Harbor did not take on military related toponyms, unlike the naval base at Carleton Island from two generations earlier. Instead it maintained the name of a locally significant individual until local commercial and recreational fishing usurped his place. It is likely that the name "Storrs" was never completely removed from the point but it is unclear what events precipitated its official return.

CHAPTER VIII

LAKE ONTARIO MARITIME LANDSCAPES: HUMAN SCALE

> The process of reading a description, in short, is like that of taking a telescope to pieces, and looking at the distant object through each separate lens, - instead of making them all bear upon one another by appropriate adjustments in the tube. There is absolutely no remedy for this but a journey to the place… (Hall 1829:184-185)

Introduction

The human body and human perception serve as the basic units of landscape analysis. Consequently, the discussion of the Lake Ontario maritime cultural landscape begins with the individual survey areas. These are spaces that can be perceived in their entirety by an individual standing almost anywhere within them and that are constructed of features comprehensible at the human scale. To address how humans used these spaces, the specific archaeology and history of each survey area are discussed in sequence from north to south. Not every aspect of the archaeological record is significant to the cultural landscape, however; some of the archaeological data are discussed here only in passing or not at all. Appendix A fully describes and summarizes all archaeological findings.

Parrotts Bay

Although Parrotts Bay was purported to contain both submerged hearths and evidence of early French settlement, archaeological investigations substantiated neither.

Residents of Nicholsons Point have reported recovering pre-contact projectile points from the Lighthouse Point Park (Figure 8.1). This site has not been registered with the Ontario Ministry of Culture and the recovered artifacts were not available for inspection, so the date and existence of the site remain unverified. Nevertheless, the ability of residents to describe the finds in some detail suggests that artifacts have indeed

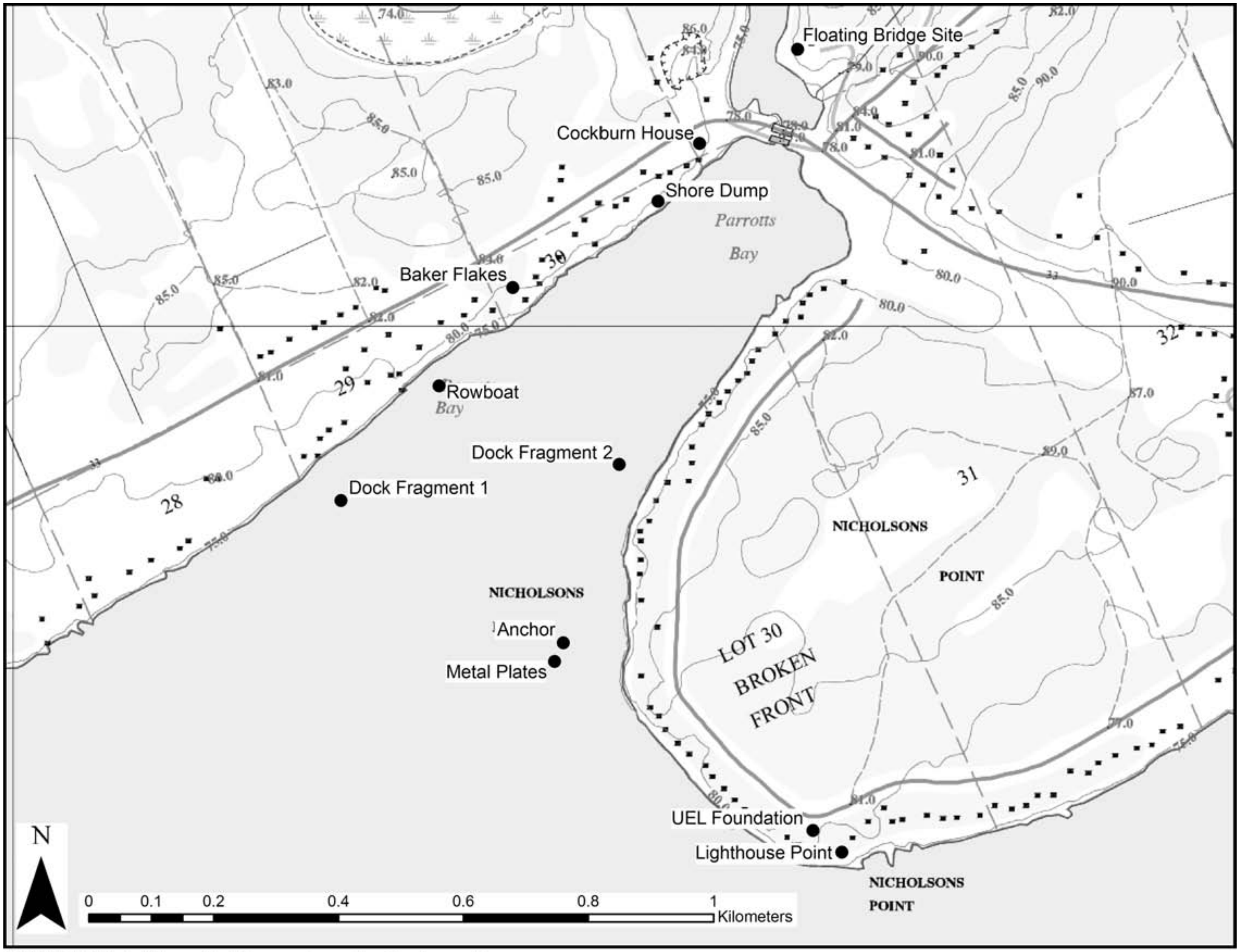

FIGURE 8.1. Parrotts Bay archaeological results.

been recovered from the park (Reginald Parks 2008, pers. comm.). The pedestrian survey of the park did not identify any additional artifacts. Local divers have reported submerged hearths situated in waters adjacent to the park. A diving survey in the area identified no hearths, and the submerged surface did not appear conducive to the preservation of exposed features. The only other Native American artifacts reported from the densely packed residential lots around the bay were several flakes found near the Baker House (John Craig 2008, pers. comm.). This site sits at a natural water access point where the shore slopes easily to the water, distinct from the steeper slopes on either side. Based on these findings, the Native American use of the bay and its shore seems to have been mostly transitory. The locations of the two sites, on the point and at a natural landing, locations where travelers passing between the mainland and Amherst Island could have easily pulled their canoes out of the water to rest or camp, plus the apparently small amount of material from both locations, support this hypothesis.

Similarly weak evidence typifies the French occupation of Parrotts Bay. Artifacts recovered from north of the bridge across the bay, including French trade seals, mirror, glass, bottles, buttons, gun flints, burned food remains, and clay pipes, suggest the nearby presence of a French habitation (Burleigh 1973:19). These materials were recovered from the Floating Bridge Site. Like the Lighthouse Point Park Site, however, this site has not been officially registered with the Ministry of Culture and the materials were not available for review. H.C. Burleigh (1966, 1973) has posited that this site may have been associated with Mademoiselle Madeleine de Roybon d'Allone, who was granted a seigneury in the vicinity. Roybon loaned La Salle more than 2,000 livres after the loss of his upper-lake ship the *Griffon* and other setbacks left him at the mercy of his creditors. In return, La Salle gave her lands that extended approximately 4.4 km inland and 8.9 km along the shore from the Toneguigon River (Collins Bay) towards l'Anse au Baril (Barrel Cove). Based on these measurements, her property extended approximately 1.6 km past Parrotts Bay, and Burleigh argues effectively that Barrel Cove is modern Parrotts Bay. Analyzing the landscape as it would have appeared in the 17th century and wisely recognizing that Roybon would have approached wherever she settled from the water, Burleigh identified three locations within the seigneury that would have been appropriate habitation sites. One of these was in the upper reaches of Parrotts Cove where there is protected easy access between water and land. This information tantalizes researchers, especially given that Roybon and La Salle may have been intimately associated, but without further data it is difficult to be certain about the nature of the French occupation along Parrotts Bay and impossible to link it to a specific individual.

This evidentiary trouble continues into the Loyalist period. Reginald Parks reported that when he moved onto his property there was a 1.5 m deep limestone foundation between his house and the road. He has subsequently used the foundation to hold his septic system and covered it with fill, rendering the foundation unavailable for inspection. Parks claims that the foundation was related to a Loyalist house. This assertion, however, cannot be verified and runs counter to the available evidence. Nicholsons Point and Parrotts Bay were situated between the initial Loyalists settlement tracts and were not substantially settled until the 1820s and 1830s (Kotte and Peachey 1784; Elmore 1836; Wood 2000:30). Furthermore, the foundation on Parks's property is situated approximately 1 km from Bath Road, which until the 1950s was the primary axis of settlement through the area. While it is possible that an early pioneer chose the point and accessed it by water, further excavation is required to substantiate this claim.

It is equally possible that the foundation is associated with the mid-19th century settlement growth that filled in much of what is today Loyalist Township (Wood 2000:30,160). By the 1830s, a saw mill had been erected on the upper reaches of Parrotts Bay and settlement was occurring along Bath Road (Elmore 1836). The sawmill was present into the late 19th century, and settlement around the bay increased with time (Elmore 1836; Meacham 1878). Divers have reported a substantial number of timber sticks throughout the North Channel. Some of these sticks may have been lost from the Parrotts Bay sawmill, which was processing timber from the interior, but others were likely lost from timber rafts. It was common to raft logs in the Bay of Quinte during the 19th century because it was considered safer than the open lake (Calvin 1945:137). By the 1870s, the sawmill was owned by George Cook, who also owned an 1867 house along the shore of Parrotts Bay. The current owner of the house, Ronald Cockburn, reported that notes about various ships entering the bay marked boards on either side of a now-covered cellar-way at the rear of the house. An historic dump, also from this period, was situated near the waterline west of the Cook house (Joseph Carty 2008, pers. comm.). As was the case with much of the archaeological data from Parrotts Bay, these artifacts were not available for study but seem to be consistent with a domestic trash dump, possibly associated with the George Raworth property (Meacham 1878).

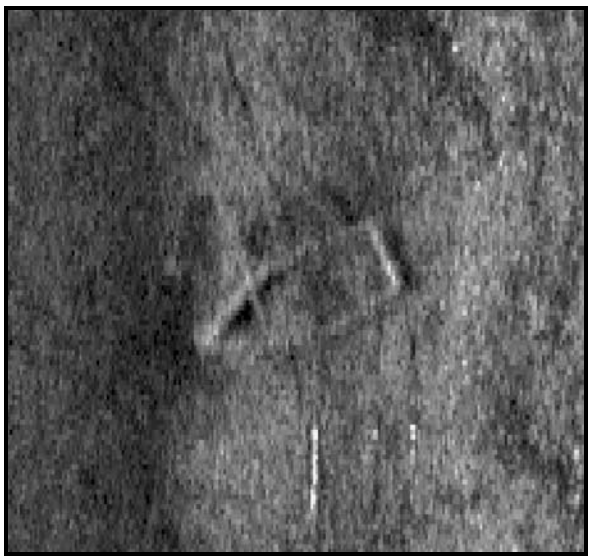

FIGURE 8.2. Side-scan sonar image of rowboat, Parrotts Bay.

The area remained largely rural during the early 20th century, with more modern houses gradually replacing some of the older structures. Among the homes built during the first half of the 20th century was the Colonel Baker House. Baker, an early advocate for the blind, had Braille marks carved on the beams and joists of one of his outbuildings so that he could help in the construction. Baker was joined by a flood of other new residents following World War II. The north shore of the bay filled in with large homes on sizeable lots, while cottages occupied the south shore on Nicholsons Point. Roads cut across the point during the 1940s and 1950s opened the area to vacation cottages (Michael White 2008, pers. comm.). The point filled in over the next few decades, and owners converted many of the cottages to year-round residences, transforming the point from a vacation spot to a suburb. The density of this development, with its associated septic systems, foundations, flower gardens, and recreational divers, reconfirms the relative paucity of archaeological sites on the shore of Parrott Bay. This period has also contributed to the nautical archaeological record. A 3-m rowboat was identified during the remote sensing survey (Figure 8.2). The boat dates to the 20th century but is not a recent loss; it is overlain with several geothermal lines used to regulate the temperature of the large homes along the north shore of the bay.

Wolfe Island

Wolfe Island is the largest of the Thousand Islands, and its location, which both commands the confluence of the St. Lawrence River and Lake Ontario and obstructs easy passage from the U.S. to Canada, has made it a far more actively and intensively utilized landscape than Parrotts Bay. The 34 hectare riverine wetland known as “Barrett Bay” formed the primary focus of the archaeological survey, but, because it is on an island, discussion of the landscape is necessarily wider (Figure 8.3) (TSHA 1988:2-2). Islands are intricately connected with other shores through maritime transportation networks but being surrounded with water requires that they also turn inwards. As a result, residents often view themselves as being distinct from those living off-island. This distinction is often perceived far more clearly by islanders than individuals living or working on the mainland where the geographic boundaries are less abrupt. It is consequently difficult to impose an arbitrary survey boundary upon what both historic and modern residents perceived as the minimal unit of the island. Factors from throughout the island are felt more clearly in the survey area precisely because it is an island, and these factors are discussed fully as they bear directly on the landscape of Barrett Bay.

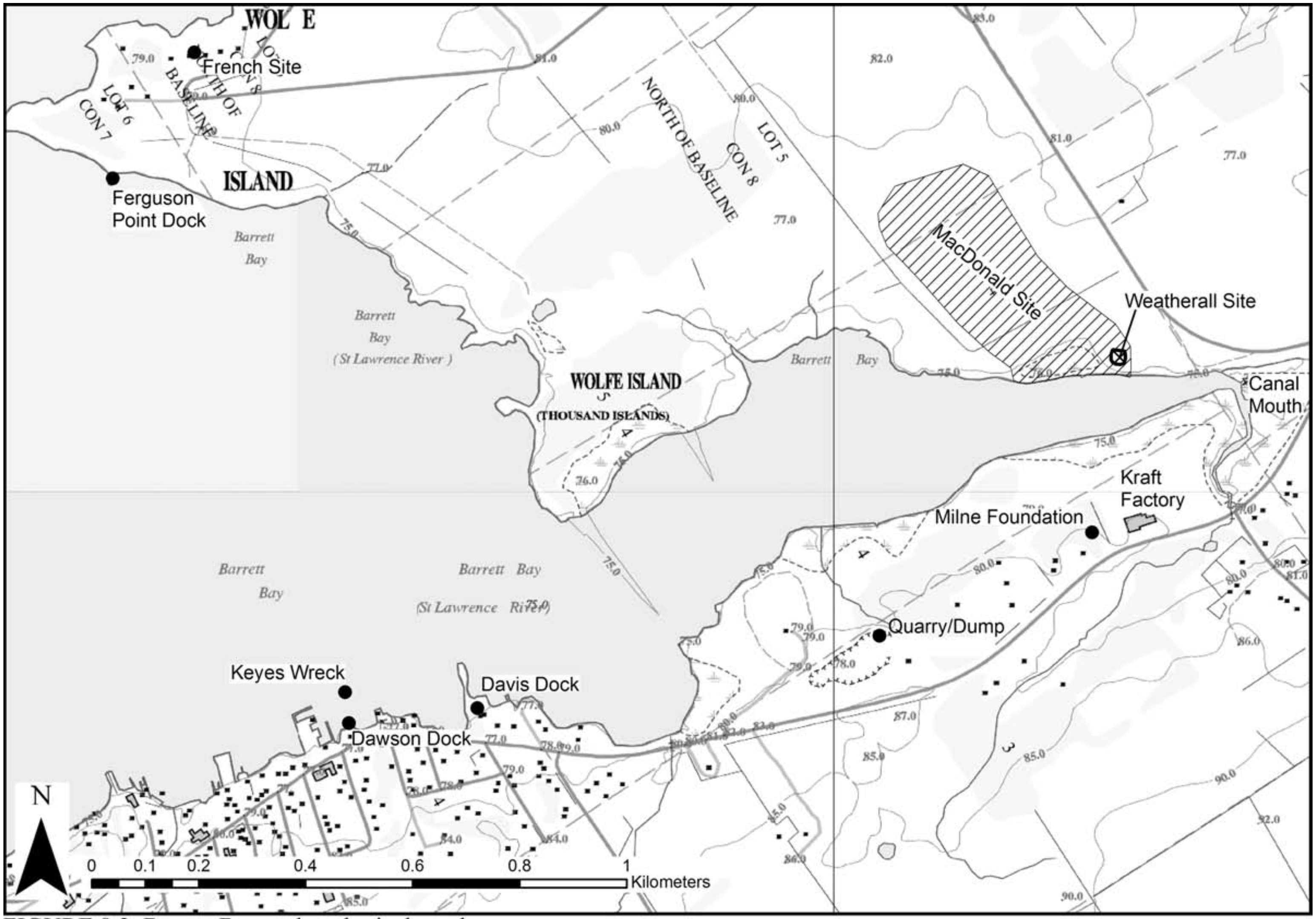

FIGURE 8.3. Barrett Bay archaeological results.

Native American Settlement

With only five sites registered on the island, the pre-contact settlement of Wolfe Island has not been well studied. Native American occupation of Wolfe Island dates to at least the Archaic Period. Late Archaic finds have been reported from the Armstrong Site (BaGc-1), situated along the shore of Button Bay on the south side of the island and as isolated finds near Grimshaw Bay on the west side of the island (Gordon McRae 2008, pers. comm.; Daechsel 1988). Additionally, a site consisting of an Archaic projectile point in loose association with two bifaces and a fire-cracked rock was identified within the survey area (MacDonald Site). All of these finds were located within 465 m of each other and 30 to 140 m from the current waterline. The two bifaces, situated at the southeast and northwest extremes of the site, were both made from quartz. The southeast biface appeared to be a 6-cm long scraper. The second biface was less identifiable but showed evidence of chipping along its edges; however, the poor knapping characteristics of the material, and the presence of natural cleavage planes on at least one edge made a definitive identification of the artifact as a biface difficult. Situated between the two bifaces was an isolated fragment of fire-cracked sedimentary rock (likely limestone). The final artifact defining the site was a projectile point made of what appears to be Onondaga chert, the most common lithic material in the area (Figure 8.4) (Gordon McRae 2008, pers. comm.; Roberts 1985:vi,95). The artifact was difficult to identify due to the missing base, but it appeared to be Archaic and may have been a Brewerton Corner-Notched projectile point (fl. 2500-3500 BC) (Ritchie 1971). Local collectors consider the area surrounding the MacDonald Site to have low probability to contain artifacts. Similarly, the field surrounding the site was not believed to contain any artifacts by the farmer, who was aware of artifacts from other fields, so it is possible that the recovered artifacts are representative of the site (Donald McDonald 2008, pers. comm.; Gordon McRae 2008, pers. comm.). As such, this site, like the Grimshaw Bay site, does not appear to have been intensively occupied but rather may have been a short-term camp (as indicated by the fire-cracked rock) along the shore. The Armstrong site,

FIGURE 8.4. Projectile point, MacDonald Site, Wolfe Island.

conversely, seems to have been more intensively occupied and may have been occupied more often and for longer periods of time (Daechsel 1988:16).

The Armstrong Site was also re-inhabited during the Middle Woodland Period. Wolfe Island in general seems to have been more intensively settled at that time, as evidenced by the recorded sites on the island: the Button Bay Point Site (BaCc-2; Early and Middle Woodland), the Brophy Point Site (BbGc-1; Early through Late Woodland), and the Mill Dam Site (Early to Middle Woodland) (Gordon McRae 2008; pers. comm.; Pendergast 1964; Daechsel 1988, 1989). These sites are largely divided between the north and south shores of the island.

The Armstrong and Button Bay Point sites are along the south shore. Also associated with these sites are known, but not systematically excavated, Native American burials at Button Bay, on Hornes Point south of Button Bay, and near Big Sandy Bay at the southwest corner of the island (Bruce Horne 2008, pers. comm.; Barbara La Rocque 2008, pers. comm.; Spence 1967). The Button Bay burial ground seems to have been the largest, including 25 skeletons excavated during the late 19th century. Accompanying these skeletons were projectile points dating from throughout the Woodland Period, as well as exotic items such as mica and cherts from Ohio and Kentucky that attest to the long-range trade networks of this period.

The best information, however, for Native American life on the island comes from Brophy Point on the north shore. This site was excavated by James Pendergast during the 1960s and appears to have been a repeatedly reused fishing camp site. Pendergast found evidence of at least eight different culture groups among the unilateral and bilateral harpoons, net sinkers, pottery, stone pipes, effigy clay pipes, awls, scrapers, projectile points, and a slate amulet recovered from the site (Pendergast 1964).

It is noteworthy that all of the recorded pre-contact sites, except the Grisham Bay site, occupy those shores of bays protected from the prevailing southwest winds. As none of these sites appears to be a large or palisaded village, it is possible that the pre-contact population used Wolfe Island primarily for resource procurement rather than long-term settlement and cultivation. Both Button Bay and Brophy Point are closer to the Canadian and U.S. shores than the majority of Wolfe Island, suggesting that ease of access to home territories on the mainland may have been a consideration in selecting the sites, further supporting the transitory nature of Wolfe Island's use.

Crossing the island was also a consideration for Native Americans, as it forms an obstruction in the otherwise direct water communication between the shores of the St. Lawrence. The potential dangers of navigating around the island are underscored by one or more Native American pots recovered by divers from the water near Horne's Point. These ceramics may have spilled from a canoe capsized in the often rough waters near the confluence of the St. Lawrence and Lake Ontario. As a result, the preferred route for most voyages across this portion of the St. Lawrence seems to have been slightly farther downstream. An anonymous 1815 map labels a portage route from Barrett Bay to Bayfield Bay as "Carrying place to Carleton Island" (Anonymous 1815). This route took advantage of the bays on either side of the island to shorten the portage and tied into Carleton Island to shorten the time on open water while crossing the U.S. channel. None of the recorded sites on the island is situated along this route. Perhaps, as Robert Hasenstab (2007) has hypothesized for other Iroquois period sites, this was a defensive settlement adaptation intended to separate camps from transportation routes that could bring attackers with little warning.

During the late 18th century this pattern was reversed, and an Onondaga village was established near Barrett Bay (Barbara La Rocque 2008, pers. comm.). By this time the lake was politically stable, and the settlement may have been positioned to take advantage of, rather than avoid, the transportation route. As British settlement on the island increased after the turn of the century, this village seems to have disbanded and the inhabitants moved elsewhere. One possible destination was Point Peninsula, 25 km southeast along the New York shore. According to local informants, Native Americans from the Point Peninsula area camped on Wolfe Island seasonally. The two primary camp locations were Button Bay and Holliday Point, where, in addition to hunting and fishing, they made reed baskets and brooms to sell to Canadian islanders (Bruce Horne 2008, pers. comm.; Barbara La Rocque 2008, pers. comm.; Richardson 1965:11; Cosgrove 1973:8). These camps seem to have been widely accepted and in some cases encouraged by the European Canadian residents. This seasonal movement continued until ca. 1900, except for periodic interruptions caused by U.S.-Canadian border disputes (Bruce Horne 2008, pers. comm.; Marshall 2000:22).

Early European Settlement

The early French presence on Wolfe Island was largely transitory. Documentary evidence indicates that Samuel de Champlain camped briefly on the island in 1615 while returning north with a contingent of Hurons, and in 1675 the island was granted, along with Simcoe and Garden islands, to La Salle as part of his seigneury (Richardson 1965:7; Hogan and Smithson 1982:482). La Salle in turn granted Wolfe Island to his clerk Jacques Cauchois in 1685, and it stayed in the Cauchois family until 1795 (Hogan and Smithson 1982:482; Breck 1989:36; Waller 1995:ii). The extent of French settlement on the island during this period remains unclear. Along the north shore west of Barretts Bay, early maps indicate long thin lots that are generally associated with French land allotments. This system of land division allowed French settlers to settle near one another along a single road that bounded all of their holdings, and the resulting pattern stands out starkly against the later British system (Chewett 1822; Elmore 1836; Hogan and Smithson 1982:483; Breck 1989:38; Waller 1995:ii). There is, however, no evidence of how many of these lots were actually occupied. Conversely, on Ferguson Point, north of Barrett Bay, there is archaeological evidence of French occupation in an area that was not formally surveyed. While excavating a septic system along the north shore of the point, residents recovered a ca. 1725 French coin and several “hand-blown” bottles (Donald Bayne 2008, pers. comm.; Arthur Britton Smith 2008, pers. comm.). This portion of Ferguson Point, like the surveyed lots, sits directly across the St. Lawrence River from Kingston and was likely closely associated with that settlement. In this period before consistent overland transportation, settlements on the north shore of Wolfe Island would have been more accessible to Kingston than mainland settlements farther to the east or west, such as Roybon’s near Parrotts Bay.

With the arrival of Governor Simcoe and the Loyalists, the name of the island was changed to “Wolfe” from the French “Grande Isle” in 1792. Whether they saw this change as a harbinger or simply took advantage of the growing demand for land, the French landowners sold the island to two retired British Officers three years later. Both Captain David Alexander Grant of the 84th Regiment and Lieutenant Patrick Langan of the King’s Royal Regiment of New York (KRRNY) were stationed on Carleton Island during the American Revolution and likely became familiar with Wolfe Island during that time (Burleigh 1973:54; Hogan and Smithson 1982:483; Breck 1989:37). Neither Grant nor Langan immediately settled on the island but instead built a house for Richard Davis, a former drummer in the KRRNY, and his family and set them to improving the land (Breck 1989:37).

Despite this presence, Grant and Langan had difficulty controlling Wolfe Island. In 1800, Langan complained that the Provincial Marine was illegally removing timber from the island for use at the Kingston naval yard (Smith 1997:29). Presumably the navy stopped at his request but timber theft remained a problem. In 1808, Langan again complained to Lieutenant Governor Francis Gore of “persons on Grande Ile taking wood and staves and acting in a lawless manner” (Gordanier 1982:40; Waller 1995:iii). In an attempt to forestall some of this theft, the trees around the bays of Wolfe Island were marked so that they could be identified (Gordanier 1982:46). The stealing of timber was endemic in early 19th century Ontario, and Langan’s repeated efforts to protect the island’s timber indicates that he saw it as a major asset of the property; developing that resource may have been one of his reasons for purchasing the island. Langan and Grant’s desire to control profits from timber export is also a possible explanation for why settlement on Wolfe Island lagged behind the adjacent mainland. While settlement near Kingston was expanding rapidly, there were only 15 families on Wolfe Island ca. 1820 (Richardson 1965:11; Cosgrove 1973:8; Marshall 2000:20). Events outside of their control, however, helped to open the island to settlement in the next decade.

According to the Treaty of Paris (1783), Wolfe Island was part of the United States; however, the British were concerned about placing the international border so close to their naval base at Kingston and disputed the U.S. claim. The claim was finally settled in 1822 by exchanging Wolfe Island and a few small islands near Cornwall for Grande Isle near Niagara, essentially trading one Grande Isle for another (Hogan and Smithson 1982:483). This action brought Wolfe Island completely under the control of the British government, which did not consider land titles descending from French seigeurial title as valid. The Langan and Grant heirs were consequently required to secure their claims and to relinquish two-sevenths of the island as Crown and Clergy reserves. These actions seem to have convinced the owners that it was time to commence selling portions of the island, and the population began increasing steadily after 1826 (Richardson 1965:14; Cosgrove 1973:3; Hogan and Smithson 1982:483).

The Weatherall Site, situated along the north shore of Barrett Bay, likely dates to this early period of settlement, either shortly before or after widespread settlement began on the island. This artifact scatter, about 30 m in diameter, included approximately 15 ceramic fragments and glass shards, as well as a pipe bowl and an unidentified iron

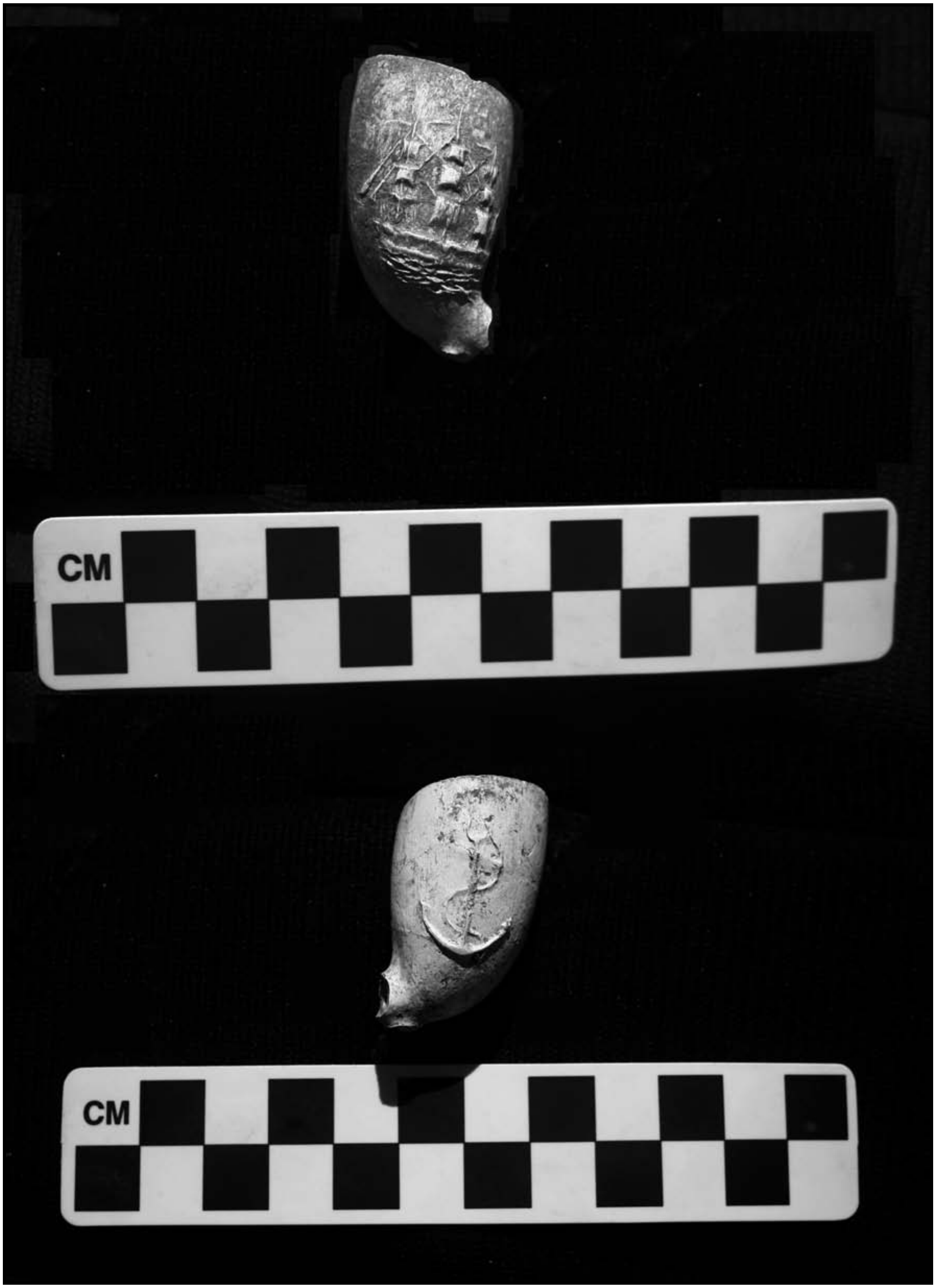

FIGURE 8.5. Embossed pipe bowl, Weatherall Site, Wolfe Island.

fragment. The ceramics included pearlware (ca. 1780–1820) and whiteware (post 1820) decorated with transfer-printed and shell edge motifs (Hume 1991). Both blue and dark brown transfer prints were noted in styles that, while fragmentary, appear to date to the early 19th century. Similarly, blue shell-edged pearlware was popular during the late 18th and early 19th centuries (Copeland 2000). One shard of hand-blown dark green glass was also found in close proximity to the ceramic fragments, and an intact pipe bowl was noted in close association with the artifact scatter. The bowl was embossed with a fully-rigged ship on one side and an anchor and cable on the other (Figure 8.5). The shape and style of decoration of the pipe were common during the late 18th century and first half of the 19th century. This suggests that the pipe and the majority of the ceramics and glass fragments were deposited during the early 19th century.

No architectural or structural remains were noted in association with the artifact scatter. Neither the 1822 Chewett map of Grand (Wolfe) island, nor subsequent maps, mark a structure in this location, so it is unlikely that the site is directly associated with a building. It appears instead to be the remains of a diffuse trash dump, possibly spread over the field with organic refuse as fertilizer. While there are insufficient artifacts to make definitive statements about the social class or occupation of the people who deposited them, the presence of the ship pipe is interesting. It implies that the owner, who may have made part of his or her living as a farmer, associated themselves with maritime pursuits even while on land. There are several interpretations of this pipe, ranging from a visiting sailor to a landsman infatuated with the sea; somewhere in between lies the possibility that the owner, involved in the mixed agricultural and maritime economy of the lake shore. preferred to express a marine identity.

Ferries to Wolfe Island

As the population of Wolfe Island increased so did the need for ferries to connect the island to the U.S. and Canadian mainlands. Never isolated, Wolfe Island was a habitable node in the easiest historical transportation network, the lake itself. The presence of the island in fact obstructed otherwise direct commerce across the St.

Lawrence River and eastern Lake Ontario. The full brunt of lake weather pummeling the west side of the island and the long peninsula extending from its east side made even partial circumnavigation difficult. Consequently, much traffic on the early ferries was not to the island itself but was across the island, to connect points in the U.S. and Canada. The combination of island, river, and wind made crossing the St. Lawrence at this point more difficult than simply traveling by road or water alone. An 1825 letter nicely sums up the annoyance caused by these circumstances:

> The Ferryman makes what will appear to you an extravagant charge – and you will wonder dear Joshua in your mind why this ferry should not be regulated on more equitable terms. The Island is Seven miles in width…you must cross it the best way you can…the roads are bad at all seasons and a conveyance is seldom to be got. (quoted in Hogan and Smithson 1982:491)

Despite these troubles, many travelers found it necessary to cross to or through Wolfe Island, so several ferries were established during the early 19th century to profit from these needs. During this period multiple ferries served the south side of Wolfe Island: Samuel Hinckley ran ferries from Cape Vincent (Gravelly Point) to Hornes Point (Hinkley Point); Abijah Putnam, from Port Putnam to Big Bay (possibly Bayfield Bay); and Eber Kelsey and Peter Sternberg, from Carleton Island to Hornes Point (Brian Johnson 2008, pers. comm.; Hogan and Smithson 1982:492; Johnson 2006:5). The earliest of these was established in 1801 by Abijah Putnam, who was sent to the St. Lawrence shore by Jacob Brown, Le Ray’s agent in northern New York, for the purpose. He settled approximately 3.8 km east of modern Cape Vincent and founded a town named Port Putnam. Port Putnam, the only American settlement in the area prior to Cape Vincent, was connected to Brownville by a state road in 1803 and was granted a post office in 1810 (closed 1813). Putnam sold his property to Peter Sternberg and John Macomb in 1805; Sternberg bought out Macomb later that year. Sternberg then obtained a 19-year lease to run a ferry from Port Putnam to Carleton Island and then almost certainly on to Wolfe Island, as the Port Putnam ferry was described as the “Kingston

Ferry” in 1809 (Hough 1854:111; French 1860; Casler 1906:146-150,155). There may have been an additional ferry run by Richard Esseltyn originating from either Port Putnam or Cape Vincent after 1809, but it is unclear that this ferry was ever viable (Casler 1906:150,155).

The Hinckley ferry is also noteworthy as it remains part of the modern landscape, preserving evidence of the historic transportation route similar to a modern road over an historic track. Samuel Hinckley, a native of New York, established his service in 1802. Both this ferry and the Port Putnam ferry were likely small boats that could be both rowed and sailed. The Horne family intermarried with the Hinckleys and during the 1820s came to run the Cape Vincent ferry (Armstrong 1973b; Cosgrove 1973; Hogan and Smithson 1982:493; Johnson 2006:3). The Hornes still operate the ferry from Cape Vincent to Hornes Point, and many of the given names of past Hornes and Hinckleys are repeated in the current generation.

For the 1809 claim that the Port Putnam ferry connected with Kingston to be true, it was necessary for there to be an overland route to the north side of Wolfe Island. It is possible that the ferry occasionally rounded the west end of the island, but weather would have often made this route untenable. The Button Bay Road, opened shortly after 1802 by Hinckley, provided the more dependable overland route. This road ran near the 6th Concession line from Button Bay on the south side of the island to the vicinity of modern Marysville (John O'Shea 2008, pers. comm; Hogan and Smithson 1982:492; Marshall 2000:20). Portions of the road survive today, some being used by modern Highway 95 (constructed 1934), but it followed a more naturally determined route that has been largely abandoned. While this road was not always easily passable, sometimes requiring nearly all day to cover 8 km, it did allow travelers to connect from the ferry on one side of the island to a ferry on the other. The Hinckleys ran a stage line for much of the 19th century along this road, essentially extending their ferry service overland. The Hornes offered a similar service for commercial goods in later years. They would transship goods from the Kingston ferry across the island and on to Cape Vincent via their ferry. They also provided winter freight sleighs when the river was frozen (John

O'Shea 2008, pers. comm.; Richardson 1965:14; Hawkins 1967:8; Hogan and Smithson 1982:485).

Samuel Hitchcock's ferry to Kingston, for which the Court of Quarter Sessions granted him a license in 1802, provided the northern extension of the Wolfe Island route. His rate was 5 shillings per person (the equivalent of approximately $24 in 2007 currency), and, as his lease renewal in 1809 stated, he was to provide "a common ferry for travelers and their stores, cattle, carriages and all other goods" (Anonymous 1963b; Armstrong 1973b; Hogan and Smithson 1982:491; Johnson 2006:2). By 1825 the ferry had passed to Archibald Hitchcock, who was operating a ferry boat "of the flat-bottom, river bateau type, four feet high, 25 feet long and eight or nine feet wide, with four to six oars on each side" (Armstrong 1973b). This was likely the "four-oared gig" that carried Basil Hall (1829:345) across the St. Lawrence. Hall took the ferries and stage from Kingston to Cape Vincent during the second half of the 1820s, traveling along what was then a corduroy turnpike across the island. On his return, he was delayed because the ferry had been borrowed to spear fish in the middle of the river (Hall 1829:354-355,357).

Incidences such as this led the Wolfe Island Council to petition Parliament for control over the ferry in 1857. The steamer *Pierrepont* was launched that year to operate as a ferry under the pilotage of Coleman Hinckley (Richardson 1965:16; Hogan and Smithson 1982:492; Johnson 2006). The *Pierrepont*, however, was not the first steamer to connect Kingston and Wolfe Island. Thomas Davis owned a steam ferry also operated by Coleman Hinckley on the route during the early 1850s (Richardson 1965:16; Hawkins 1967:7). In 1872, the ferry was acquired by the St. Lawrence Steamboat Company (Folger Brothers), which ran a second *Pierrepont* between Cape Vincent, Carleton Island, Wolfe Island, and Kingston (Brian Johnson 2008, pers. comm.; Richardson 1965:16; Young 1966:66; Hawkins 1967:7). Unfortunately, the *Pierrepont* was no more dependable than the early 19th-century ferries, and it was often absent or running on irregular routes, to the annoyance of Wolfe Island residents. As a result, when the Folger lease expired in 1904, the township once again took control of the ferry.

This began a period of government controlled ferries named "*Wolfe Islander*" that extends to the modern period (Johnson 2006).

While the ferry route remained largely unaltered over this period, where the ferry landed, both in Kingston and in Marysville, changed several times over the years. The modern Marysville ferry terminus was established between 1903 and 1904 but the original depot was at Mill Point west of the village (Brian Johnson 2008, pers. comm.; Hawkins 1967:6). During the intervening years, the ferry terminus often shifted with the owner. For a time it operated from the Hitchcock House on the western edge of the village, or at the Dawson dock, closer to the village center (Walling 1860; Hawkins 1967:7; Hogan and Smithson 1982:491). The flexibility in ferry landings is preserved in Meacham's 1878 atlas, which shows the ferry route splitting into three possible paths at Garden Island: one landing at Hitchcock's, one at Dawson's, and one farther east at the Going (Davis) dock. The changes in dockage seem to have been largely for the convenience and profit of the ferry operator. In the case of the Hitchcocks, if not the others, a ferry-operator owned hotel benefited from its proximity to the ferry depot.

As the primary link to the mainland, the ferry figures prominently in the lives of all modern Wolfe Island residents. The ferry schedule structures their daily lives, dictating the comings and goings of school children, friends, and clients. While the nature of the relationship with the ferry was likely different in the past, the power of the relationship was likely comparable. For example, prior to the beginning of year-round ferry service, made possible in 1975 by a bubbler system installed to prevent the formation of solid ice, there were periods in the spring and fall when the island was completely cut off from the mainland (Richardson 1965:18; Marshall 2000:12). These were times when the ice was too thick to permit the passage of a vessel but too thin to support human foot traffic. If this condition persisted, the island would become truly isolated, raising the possibility of shortages of food, fuel, and other supplies.

Other effects of the ferry were explained by John O'Shea, a life-long resident of the island and local historian. O'Shea views 1964 as a watershed date for the island because in that year the province took over the ferry, made it free, and introduced a regular, nearly year-round schedule. (Meanwhile, the Cape Vincent Ferry remained private and charged a fee.) These changes reinforced the links between Kingston and Wolfe Island and transformed Wolfe Island into essentially a bedroom community. Beyond blurring the distinction between mainland and island in much the same way that a bridge would, this change caused a shift in island exogamy. Previously there would be seven or eight new teachers every year, many of whom would marry into the community and become permanent residents. Woman teachers were required to stop teaching once they were married, leading to more openings and “new blood” for the community. This practice largely ended with the improved ferry service because it became possible for teachers to work on the island while living on the mainland. At the same time, many new residents of the island who continued to work and socialize in Kingston did not fully contribute to the Wolfe Island community.

O’Shea also made the statement that “ferries were more convenient in the past.” He then juxtaposed the time and effort it took to travel 3 miles (4.8 km) by ferry to a 20 mile (32.2 km) coach ride. For much of the region this was historically a real choice, either cross by ferry or ride several miles out of the way to a bridge or ford. Although ferries have become increasingly more efficient and convenient in an absolute sense, the efficiency of other means of travel has increased at such a rate that the relative convenience of ferries has declined. The modern perception of distance and the time necessary to travel a distance has outpaced the speed of ferries. Today the queue for the ferry often mingles flustered visitors, annoyed with the wait and afraid to miss the boat, with calm residents talking with their neighbors, napping, or reading a book. The nature of the acceptance has no doubt changed over time, but an acceptance of the ferry and its idiosyncrasies seems to have been a defining feature of Wolfe Island life since the 19th century, a badge of a true “Wolfe Islander.”

Wolfe Island’s 19th-Century Industrial and Commercial Development

Timbering was the first major industry on the island and was the occupation of many early residents. Not only was this work undertaken by the initial Loyalist settlers but also by later immigrants such as the Scotsmen who came to the island in the 1820s and 1830s (Hawkins 1967:3; Armstrong 1973a; Cosgrove 1973:8; Hogan and Smithson 1982:484; Waller 1995:iv). While much of this timber was exported through the Calvin firm on the adjacent Garden Island, there was also local processing and rafting. Port Metcalf, at the foot of the island, was used for rafting logs, and there were at least two sawmills during the 1850s. Extant cribs for docks and timber moorings have been reported at the sawmill on Reeds Creek (John O'Shea 2008, pers. comm.; Hogan and Smithson 1982:485; Marshall 2000:35).

Quarrying closely followed timbering as the island’s second industry. The limestone bedrock of Wolfe Island formed during the Paleozoic, approximately 5000 million years ago, and was then covered with sands and clays deposited by post-glacial seas (TSHA 1988:2-1). Early European inhabitants noted outcrops of the valuable bedrock, and in 1828 large-scale quarrying began. Stone from these quarries, most of which were clustered around the village of Marysville, went to build the Rideau Canal, Welland Canal, St. Mary’s Cathedral (Kingston), and Kingston Penitentiary (Richardson 1965:14; Hawkins 1967:3; Hogan and Smithson 1982:484; Marshall 2000:21). In general, the limestone industry had a greater impact on the island population than timbering. Shipbuilding and maritime-related infrastructure burgeoned during this period to provide the boats and the docks needed to remove the limestone from the island (Richardson 1965; Hawkins 1967; Hogan and Smithson 1982).

Expanding employment also drew more people to the island, allowing the agricultural community to grow as timbering cleared new land, now available for farming. Many farm boys, in turn, made extra money during the navigation season working on ships transporting stone and other products (Marshall 2000:22). The combination of these factors caused the island population to swell from 276 in 1826 to 3601 in 1861 and allowed Wolfe Island to be incorporated as a township in 1850 (Richardson 1965:14; Cosgrove 1973:8; Hogan and Smithson 1982:486).

Several examples of these stone quarrying industries are situated within the survey area. One of the quarries has been adaptively reused as the township dump.

Located immediately east of the village, this quarry is being slowly filled in with trash from throughout the island, gradually returning the ground surface to its pre-19th century level. Possibly associated with it is what appears to be the remains of a lime kiln outbuilding (Milne Foundation) that was recorded to the east. This shallow (0.6 m high) stone-lined foundation measured 12.5 m east-west and 4.5 m north-south (Figure 8.6). South of the foundation was a large flat-topped berm rising approximately 2.5 m above the foundation, extending from Highway 96 to the foundation. A smaller berm, approximately 1.5 m higher than the foundation, was situated north of the structure. The two berms give the foundation the appearance of having been excavated, but its base is likely at or near the original ground surface. The Milne Foundation may be associated with a nearby lime kiln demolished prior to construction of the Kraft factory in the 1950s (John O'Shea 2008, pers. comm.). The foundation is situated in the vicinity of the lime kiln indicated on the 1878 Meacham map, within the property owned by Jonathan George. Earlier maps (Chewett 1822; Walling 1860), however, do not show a kiln in this location. The foundation showed no evidence of burning and was not constructed like any known lime kiln, so it is unlikely that it is the remains of the kiln itself. It may have been an ancillary structure, possibly a warehouse. This last interpretation is supported by the presence of the large berm that could have facilitated moving materials (limestone and charcoal) from the road to the structure and could have permitted the materials to be dumped directly into the structure.

There is also historical evidence of a shipyard in or near the survey area. In 1823, John Ferguson sold a portion of the point that bears his name and forms the northern boundary of Barrett Bay to Richard Smithers, shipwright. This property was described as being on the southwest side of the former King's Shipyard (Anonymous 1823). Compared to the lot sizes indicated in 1878 (Meacham), the acreage of the lot sold in 1823 (80.9 hectares, 200 acres) suggests that this was not the actual point but the larger tract of land immediately to the east, bounded on the north by Browns Bay and on the south by Barrett Bay. This conclusion is circumstantially supported by the obituary of Oliver Thibodo, which describes him as the owner of a shipyard on Browns Bay

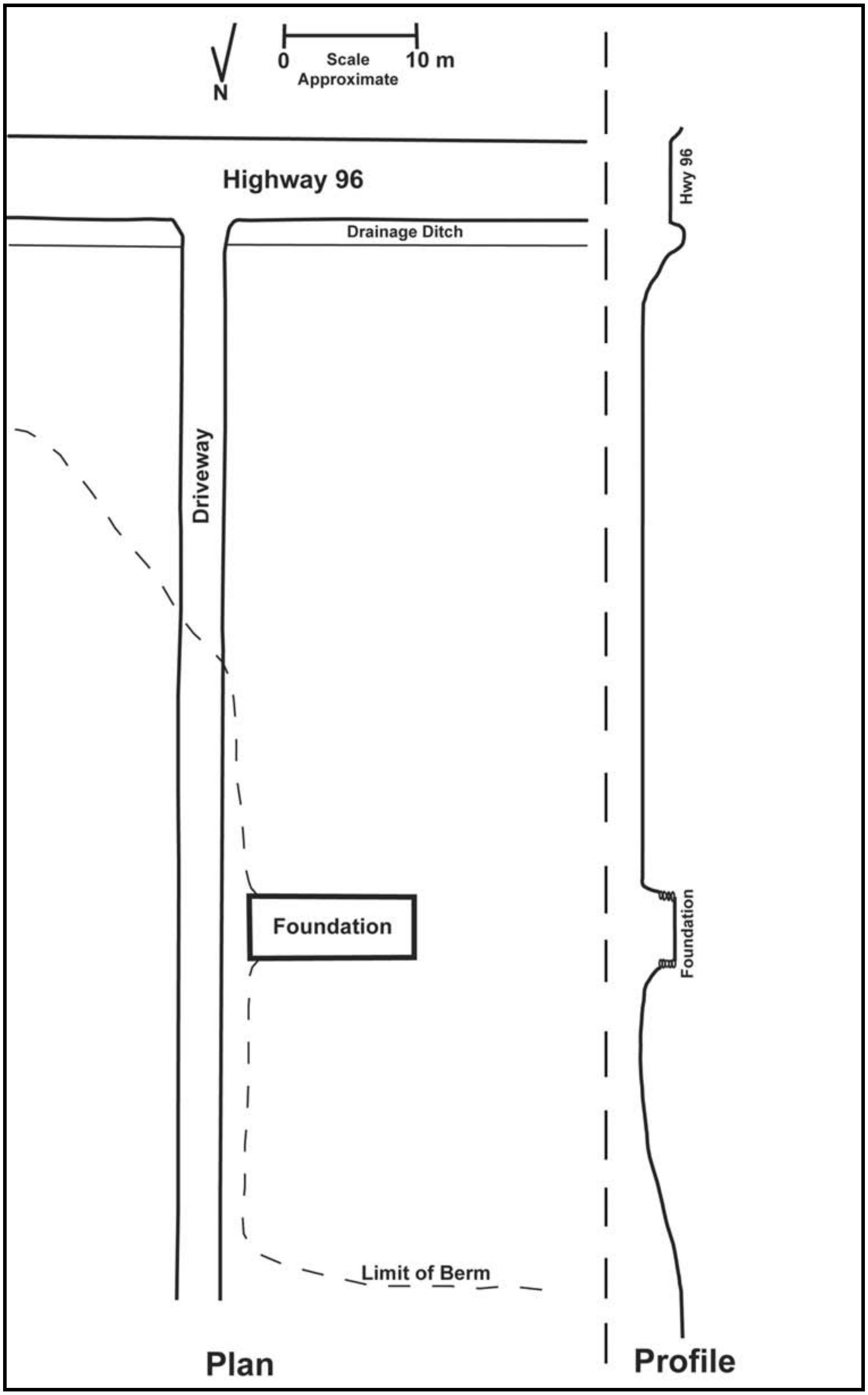

FIGURE 8.6. Milne Foundation, Wolfe Island.

(Anonymous 1820b). Closer to the actual point, a boatyard was operated on the north side of Ferguson Point during the early 20th century (Arthur Britton Smith 2008, pers. comm.).

The house near the end of Ferguson Point existed by 1860 (Walling). Ceramics and pipe fragments recovered when an addition was added to the house suggest that the site has been occupied since the early 19th century (Donald Bayne 2008, pers. comm.). This building is purported to have been a station on the Underground Railroad (Barbara La Rocque 2008, pers. comm.; Hogan and Smithson 1982:496; Marshall 2000:28). Whether or not this connection is true, the proximity of this point to mainland Canada and Kingston, and the presumed relative ease of ferrying escaping slaves over the international border, could have made it a logical candidate for such use. This easy access to the mainland market as well as lake transportation may have also attracted Captain J. H. Radford, who owned the property by the 1870s. Radford used the point for his shipping operations and may have constructed the large timber dock that was located on the south side of the point (Donald Bayne 2008, pers. comm.; Barbara La Rocque 2008, pers. comm.).

The last major 19th-century industry on Wolfe Island was dairy farming and cheese production. In 1865, a Mr. Bennett witnessed cheese being made in Theresa, New York, just across the St. Lawrence River, and brought the idea to Wolfe Island. The first cheese factory opened in 1869 immediately south of the survey area at Cold Springs. Eventually there were six different cheese factories on the island, with five operating during the busiest period in the early 20th century (Meacham 1878; Hawkins 1967:4; Cosgrove 1973:22; Hogan and Smithson 1982:485). Kraft Foods of Canada purchased and closed the two remaining cheese factories in 1955 before opening their own factory near the original Cold Spring site in 1957. The Kraft factory closed in 2000 (Hawkins 1967:3; Cosgrove 1973:22; Hogan and Smithson 1982:485; Marshall 2000:21). It is an interesting aside that the Kraft factory building, which caused a disruption of the local economy during the mid-20th century, now houses the headquarters of the wind farm company that has engendered a good deal of debate in the past few years. A windmill farm is currently under construction on the shores of Wolfe Island to the applause of some and the criticism of others. The fact that two local upheavals were centralized in an unassuming concrete block building speaks to the forceful effect that the apparently mundane can have in the local landscape.

Wolfe Island Canal

Wolfe Island occupies a unique position as one of the major natural obstructions in the Lake Ontario-St. Lawrence River transportation network. The west side of the island receives the full brunt of Lake Ontario weather, so it is not safe for small boats or any vessel working close to shore. The eastern foot of the island extends far down the St. Lawrence, requiring a long detour to circumnavigate. Consequently, the ferry and turnpike system from Kingston to Cape Vincent developed to move international travelers well before the island's population alone would have supported such infrastructure. The presence of these connections, however, influenced the economy and worldview of the islanders by linking them as closely to the U.S. as to Canada. During the 19th and early 20th century it was common for Wolfe Islanders and Cape Vincent residents to travel to each other's homes for suppers and to enjoy picnics on the opposite shores. Similarly, many young Wolfe Island natives moved to the U.S. for work and a steady stream of Wolfe Island hay and cheese arrived in U.S. markets throughout New York (John O'Shea 2008, pers. comm.). Similar connections were likewise maintained with Kingston, linking Cape Vincent, Wolfe Island, and Kingston into a single extended community. The geography of the island thus disrupted trade by water while fostering international social and trade relations.

This combination of factors, alloyed with the expanding agricultural and industrial hinterlands of the region, prompted discussions of a canal across the island during the 1830s. In 1834, 30 Kingston businessmen petitioned the Upper Canada Legislature to build a canal. This proposal, which was read into the record in 1836, contained pledges of financial support from Wolfe Island and Cape Vincent (Anonymous 1835; Hogan and Hogan 1984; TSHA 1988). While the proposal was sufficiently advanced for the "proposed canal" to appear on Publius Elmore's (1836) map of the region, the process stalled and no action was taken for another decade.

During the intervening years Kingston merchants became increasingly concerned about their position in the grain forwarding business. They were attempting to harness the Kingston hinterland while Toronto, Oakville, and Hamilton flourished (McDowall 1975:52). To secure their position as a major port, the Kingston merchants began looking for the means to place themselves at the center of a U.S.-Canada connecting route, leading to the proposal of the Wolfe Island, Kingston, and Toronto Railroad in 1846 under the leadership of John Counter (Anonymous 1846). The proposal was ambitious, with plans for railways, bridges, causeways, and steamer lines, but, again, no action was actually taken to build this connection, largely because a Canadian economic depression led to a lack of investment (Anonymous 1846:8-14; Young 1965:35; McDowall 1975:60).

The undertakings of other rail companies finally spurred the Wolfe Island connection into action during the 1850s. The Rome-Cape Vincent Railroad (later Rome, Watertown, and Ogdensburg Railroad Company and then New York Central Railroad) began service to Cape Vincent in 1852 (Casler 1906:161; Cook 1929a; Horsey 1942:27). At the same time, the Grand Trunk Railway (later Canadian National) was under construction, and it was believed that a spur would be built to Kingston. With a connection across Wolfe Island, the American market would be open to Canadian, Kingstonian, and Wolfe Island goods (Anonymous 1846; Hawkins 1967:10; Anonymous 1984b). In the meantime, regular packets run by the Gildersleeve family began to connect Kingston with the Cape Vincent train. The Gildersleeve boats, as well as the smaller American steamer *Lady of the Lake*, made daily trips between the two cities stopping at Wolfe Island to collect cheese, butter, and hay for the American market (Hough 1854:111,116; Horsey 1942:27; Young 1965:44).

In the context of this competition and opportunity, the Wolfe Island Railway and Canal Company was incorporated as a private undertaking in 1851 (Anonymous 1851, 1969:2; TSHA 1988:2-1). As the name of the company implies, its owners had the option to build a railway, a canal, or a combination of the two. With 75% of the island less than 15 m above the lake there was no need for locks, so the canal option became the preferred alternative (Richardson 1965:20; Marshall 2000:8). The company began to purchase land between Barrett Bay and Button Bay, following very closely the route of the historic, and likely prehistoric, portage across the island. Construction began in 1852 but delays prevented completion of the canal until 1857 (Anonymous 1815; Young 1965:44; Armstrong 1973a; McDowall 1975:61; Hogan and Smithson 1982:494; TSHA 1988:2-1) (Figure 8.7). As originally built, the canal was 1.2-1.8 m (4-6 ft.) deep, with cribs at the Button Bay entrance to prevent marsh from floating into the canal mouth and a swing bridge at the Barrett Bay entrance to allow continued use of the highway to the foot of the island (John O'Shea 2008, pers. comm.; Young 1965:36; Armstrong 1973a). The swing bridge was located where the current highway crosses the remains of the canal and was operated by Joseph Kyle, who erected the still-standing MacDonald House between 1850 and 1852. Kyle, a farmer, gave the property for the bridge with the stipulation that he be made the bridge master responsible for collecting tolls (Barabara La Rocque 2008, pers. comm.; Donald and Mary MacDonald 2008, pers. comm.).

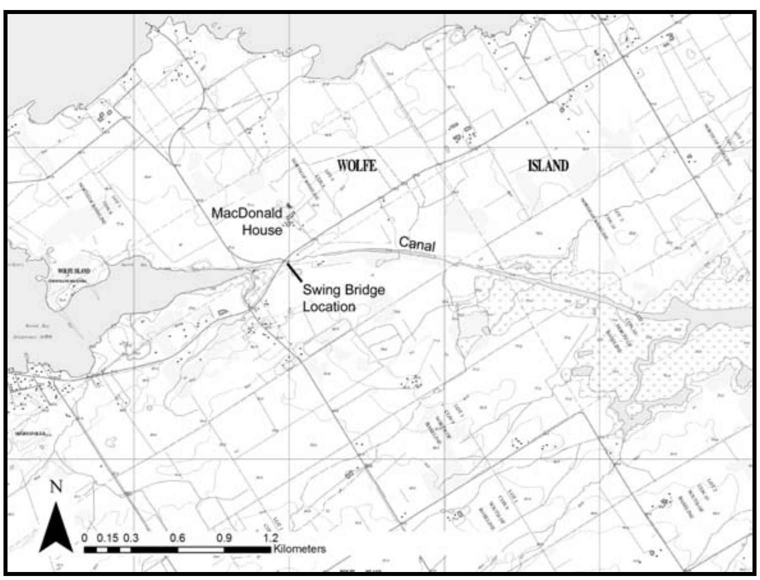

FIGURE 8.7. Wolfe Island Canal as represented on a modern 1:50,000 topographic map.

The first vessel to pass through the canal was the paddle-wheel ferry *Pierrepont.* The *Pierrepont* was the primary ferry from Kingston to Wolfe Island during this period, and, after the opening of the canal, it called regularly at Cape Vincent (Richardson 1965:20; Johnson 2006:12). The ferries and the canal thus became a single transportation entity during the second half of the 19th century. Additionally, small sailing vessels passed through the canal, often towed by horses (Barabara La Rocque 2008, pers. comm.; John O'Shea 2008, pers. comm.). The ferries seem to have served primarily the passenger, rail, and transshipment business, while the sailing vessels were oriented more towards the local market, carrying local produce between Canada and the U.S.

The canal, however, was completed relatively late in the canal period, more than a quarter century after the Erie and Champlain canals, nearly two decades after the Oswego Canal, and two years after the unsuccessful Black River Canal. By this time, the railroads were well established and becoming widespread, and the success of the canal hinged on the spread of a single railway, the Grand Trunk. The canal operators hoped to tap the Grand Trunk when it was extensive enough to drain the produce of Canada through Wolfe Island but not so well developed that it bypassed Kingston. Kingston itself did not have a far-reaching network of hinterland roads or rail to draw in produce, and there was no practical reason that lake captains with eastbound cargo would call at Kingston rather than Cape Vincent, where the railhead was located (McDowall 1975:61). Unfortunately, the management of the Grand Trunk Railway did not follow the plan that the owners of the Wolfe Island Canal had anticipated. The Grand Trunk reached Kingston in 1856 but situated the depot more than a mile from the center of town. It was not until 1860 that a spur was extended to the waterfront, by which time there was a through line from Toronto to Montreal and no reason to transship goods at Kingston for passage through the canal (Preston 1954:15; Young 1965:35; Geiger 1971:11; McDowall 1975:62; Anonymous 1984b; Johnson 2006:10). By the time the Grand Trunk was in a position to feed the Wolfe Island Canal, it had already made Kingston a railway backwater.

The rail ferry *John Counter* is a prime example of the commercial disappointment caused by the failure of the canal to be completed in a timely manner and the lack of a Grand Trunk depot at the waterfront. Named for one of the principal proponents of the canal, the *John Counter* was launched in 1853 with the expressed purpose of carrying railcars between the Cape Vincent and Kingston railheads. The steamer was disposed of within a year, as it became clear that the canal would not be completed on schedule and that there were no immediate plans for a depot on the Kingston shore (Horsey 1942:29; Young 1965:36,44; McDowall 1975:61).

Despite these shortcomings, the finished canal was a boon to the local community, especially during the American Civil War, when the wartime economy led to increased trade between the U.S. and Canada despite British support for the Confederacy. This trade, however, suffered a blow in 1866 when the U.S. ended its trade reciprocity agreement with Canada (1854 Elgin-Marcy Treaty). Nevertheless, apparently riding high on the successful first years of the canal, the St. Lawrence Steamboat Company undertook the task of enlarging the canal in 1868. Coleman Hinckley, who built the *Pierrepont*, and other local businessmen formed the St. Lawrence Steamboat Company primarily to operate the ferry between Kingston and Wolfe Island. Because the ferry ran through the canal, they became involved in the canal as well and decided to enlarge it to better accommodate the new steamer *Watertown* (Johnson 2006:11-13). They completed the enlargement in 1870, making the canal approximately 2.1 m (7 ft.) deep and 30.5 m (100 ft.) wide (Armstrong 1973a; Hogan and Smithson 1982:494; Anonymous 1984a, 1984b; Kilfoyle 1984; TSHA 1988:2-1).

At about the same time the St. Lawrence Steamboat Company completed improvements to the canal, its owners sold the company to the Folger brothers (Henry, Benjamin, and Fred). Originally from Cape Vincent, the Folders by this time were operating out of a wharf at the foot of Brock Street in Kingston. They maintained at least three vessels on the line between Kingston and Cape Vincent through the canal: the *Pierrepont*, the *Maud* (*America*), and the *Geneva* (Hogan and Smithson 1982:494; Anonymous 1984b; Johnson 2006:13-14). The dimensions of the second *Pierrepont* suggest the size of vessels capable of passing through the canal. Built in Great Britain by W. Power and Company and reassembled in Canada for launch in 1871, the side-wheeler *Pierrepont* measured 39.6 m (130 ft.) long, 5.7 m (18.7 ft.) in beam, and drew 2.1 m (7 ft.) of water, for a gross tonnage of 252 (Johnson 2006:13).

The smaller (36.6 x 9.8 x 1.2 m) *Maud* is also informative but it bears more on the interconnectedness of Kingston shipping than on the maximum dimensions of the Wolfe Island Canal. Originally owned by the Gildersleeve family and given the name of Charles Fuller Gildersleeve's seven-year-old daughter, it was launched in 1871. When the *Maud* did not perform as well as expected, it was sold to the Folgers (Young 1965; McKendry 2003:17). This sale was not the Gildersleeves' only involvement with the canal; members of the family had been involved in canal and lake shipping since the early 19th century. Sylvester Gildersleeve was a shipbuilder at Sackets Harbor during the War of 1812. He likely informed his brother, Henry, who was also a shipbuilder, of the benefits to be had by settling on Lake Ontario, and in 1816 Henry moved to Canada. He settled in Ernestown (Bath) and married into the shipbuilding Finckle family. He was involved in the construction of the *Frontenac* and seems to have been responsible for outfitting the vessel (Horsey 1942:7; Young 1966; McKendry 2003:6).The possibilities of steamboat navigation impressed Henry, and by 1819 he was captain of the steamer *Charlotte*. He used the profits from operating the *Charlotte* to purchase control of the vessel, and then used those profits to build other ships, eventually building a steamboat empire that became the Northern Navigation Company and later Canada Steamship Lines (Young 1966; McKendry 2003:21). Henry was also very involved in the introduction of railroads to the region. He named his last lake steamer *New Era*, possibly hinting at what he perceived as the transition from ship to rail (Horsey 1942:22). He was also very involved in the Wolfe Island, Kingston, and Toronto Railroad plans of the 1840s and, other than those who held some civic office, his was the first name on the list of supporters (Anonymous 1846:2). Henry died in 1851, but his son, Overton, served as a director of the Wolfe Island Railway and Canal Company. Following Overton's death in 1864, the Gildersleeves' involvement in the canal becomes less clear, but their office seems to have paid the swing bridge operator at the Barrett Bay entrance to the canal for several more years (Horsey 1942:27-28; Young 1965:45, 1966).

Despite the involvement of well-established shipping families such as the Gildersleeves and Folgers, the canal eventually began to fail. The 1870 dredging was among the last maintenance operations on the route, and by 1892 it was no longer passable by ferries or commercial vessels (Richardson 1965:20; Armstrong 1973a; Hogan and Smithson 1982:494; Kilfoyle 1984; Marshall 2000:29). It was likely not economically beneficial to maintain the canal in the face of declining traffic, and the ferries simply continued to use the canal as long as possible without the added financial burden of upkeep. By the early 20th century, enough silt and aquatic growth had accumulated that the canal was passable only by small boats, and by ca. 1930 only St. Lawrence skiffs, canoes, and other paddled or rowed boats could make it through (Marjorie Crothers 2008, pers. comm.; Mark McRae 2008, pers. comm.; Hogan and Smithson 1982). In 1932 the canal was closed, and in 1942 culverts were installed at the Barrett Bay entrance allowing for a permanent road over the canal and making the canal good for little except trapping muskrats (Donald MacDonald; John O'Shea 2008, pers. comm.; Hunter 1936; Anonymous 1984a; Marshall 2000:29).

Today, the canal is clearly visible on the Wolfe Island landscape as a marshy trough across the center of the island. At the Barrett Bay entrance, within the survey area, there is minimal flow through the culverts even during high-water years. The potential of the canal, however, still figures prominently in the islanders' consciousness. There was a movement in 1904 to rehabilitate the canal, but costs were judged to outweigh benefits. The 1960s and 1970s saw similar failed attempts (Allmark 1962; Hogan and Hogan 1984; Kilfoyle 1984). The most serious attempt to reopen the canal occurred during the 1980s, with several feasibility studies suggesting that the canal could be used for recreational boating and contribute significantly to tourism in Kingston. This effort was nearly successful but was quashed by a change in administration (Donald and Mary MacDonald 2008, pers. comm.; BJAL 1987; TSHA 1988). Subsequent attempts in the 1990s were also unsuccessful (John O'Shea 2008, pers. comm.). Despite these setbacks, reopening the canal remains a popular topic of discussion. However, in the current political climate, with its increased border security, arguments for rehabilitating the canal generally focus more on the benefits of increased water flow through Barrett Bay than on international tourism.

The canal is also interesting in a cultural geographic sense beyond the perceptions of Wolfe Island residents. As discussed above, the island was a roadblock in the natural thoroughfare of the lake and river. By cutting the canal through the island, the residents of Wolfe Island and Kingston essentially extended the lake through the island, correcting nature's "mistake" and permitting the unrestrained trade that was the norm for most of the lake. For people accustomed to easy travel by water, this likely seemed a natural solution. The canal also offers informative implications about the international nature of this trade. There is no clearer example of the porosity of the border in this region. The canal never would have been constructed without the hope of unrestricted trade across the international boundary. Its presence, as well as the involvement of trans-border merchants such as the Folgers, can be seen as an extension of the pan-lake identity that typified Lake Ontario merchants during the first half of the 19th century. Even after the commercial fortunes of the canal declined, farmers and recreational boaters enjoyed the safe and convenient passage through the canal to connect points in Canada and the U.S.

Wolfe Island's Coal-Scape

Also indicative of international trade and slow economic decline are the coal-related historic resources of Barrett Bay: two coal docks (Davis Dock and Dawson Dock) and the remains of a coal barge (Keyes Wreck). By the 1920s, coal was the only major cargo being transported within Lake Ontario, primarily from the Oswego-Rochester area to Canadian ports. Other commodities were shipped through the lake but did not connect Lake Ontario ports the way that coal did. Even coal was on the wane, and by the close of the 1920s it was in steep decline (Pound 1945:326,332-333; Williams 1955:205-207; Ericson 1969a:101; Ellis 1984:298-299; Francis 1986:261). Shipping coal on Lake

Ontario was, however, the last use for many wooden ships on the lakes. In many cases, once-independent lake schooners were cut down and remade as barges to be towed in consort (Ericson 1969b:202; Barry 1996:107,109,131,148). Both of these trends, the end of intra-lake trade and the end of wooden shipbuilding on the Great Lakes, are displayed in the Barrett Bay industrial/commercial landscape.

According to local tradition, the Davis and Dawson docks received much of the coal for Wolfe Island during the late 19th and early 20th centuries. While most of the coal delivered to the island was for local consumption, some was occasionally re-exported to Cape Vincent and Kingston (Barbara La Rocque 2008, pers. comm.; Mark and Mabel McRae 2008, pers. comm.; George Merry 2008, pers. comm.). Both docks were also used as ferry landings (Brian Johnson 2008, pers. comm.; Meacham 1878). The larger and longer-lived of the docks, the Davis Dock, also known as the Hogan Dock, was built between 1860 and 1878 and was possibly associated with the Anglin family of coal merchants (George Merry 2008, pers. comm.; Walling 1860; Meacham 1878). Located at the foot of Going Street, this dock was constructed of concrete and squared wood cribbing filled with stone and initially capped with rock followed by concrete slabs (Figure 8.8). The dock is in a poor state of preservation; much of the stone has spilled out of the crib work, and trees grow through the deck. Surrounding the dock was debris likely lost or cast off from the dock, including cast iron pipe, bricks, and coal. Additionally, the remains of structures associated with the coal company, torn down during the 1940s, are situated between it and Highway 96. These buildings included the office and an ancillary building near the current house on the property and a scale house to the west (Barbara La Rocque 2008, pers. comm.; Mark and Mabel McRae 2008, pers. comm.; Meacham 1878)

The mixture of crib and deck materials utilized in the Davis Dock suggests that it was repaired or modified during its use-life. This change in materials is likely associated with the increasing availability of concrete during the 20th century but may also relate to changing ideas about the permanence of the structure and its owners’ willingness to invest in infrastructure. During the historic period, shifts from wood to stone

FIGURE 8.8. Davis Dock, Wolfe Island, in 2008. View towards the southeast.

construction often indicate ideas of permanence in place and structure (Pope 2004:182). The addition of concrete cribbing to the head of the dock and the placement of a concrete deck over the stone deck are modern indications of the same notions of permanence.

The greater permanence and longer use-life of the Davis Dock are notable in comparison with the Dawson Dock, which is more indistinct archaeologically, historically, and in the public memory. The Davis Dock does not appear in the 1878 Meacham atlas of Lennox and Addington County but was likely built not long after. Kenneth Keyes, the current property owner, follows local tradition in believing that the Allison Coal and Lumber Company operated the dock. A search of the Kingston *Daily British Whig* for a period when the dock was likely in use (1915-1930) did not produce any reference to this company. It is possibly that “Allison” is a corruption of either “Anglin” or “Aylsworth,” both names of local coal merchants (Anonymous 1926b, 1926c). S. Anglin Company is a particularly attractive alternative because, like the purported "Allison" company, that company advertised lumber and woodworking, as well as coal (Anonymous 1926c). It is also possible, however, that the Allison company was a smaller Wolfe Island business that would not have appeared in the Kingston newspaper. The name "Dawson" that is also applied locally to this dock seems to stem from the use of an earlier (1840s) dock at this location by the ferry operator Dawson (Brian Johnson 2008, pers. comm.; Hawkins 1967:7). Since a dock matching the archaeological remains does not appear on later 19th century maps and the archaeological dock existed into the 20th century, it is likely that the original Dawson Dock was replaced by the dock remains found at this location.

FIGURE 8.9. Dawson Dock, Wolfe Island, in 2008. View towards the north.

The archaeological remains of the Dawson (Allison) Dock consist of a low mound of rocks leading from shore toward a small island of stone partly framed with fallen timber cribbing (Figure 8.9). The island, situated approximately 75 m from shore, is the remains of the dock head. A modern concrete and steel dock partly overlays the landward portion of the Dawson Dock. The house associated with the modern structure incorporates the former company office building associated with the historic dock, which also post-dates 1878 (Meacham 1878) (Figure 8.10). The modern dock was built after an early boathouse burned in 1990. The boathouse was either contemporaneous with or built shortly after the closing of the Dawson Dock, as its street-level story (above where the boats were stored) was used as a blacksmith shop and then as an auto mechanic's garage prior to construction of the current auto mechanic's garage across the street in 1947 (Mark and Mabel McRae 2008, pers. comm.; George Merry 2008, pers. comm.).

FIGURE 8.10. Keyes House, former Dawson Dock office, Wolfe Island, in 2008. View towards the northeast.

The usefulness of the Dawson Dock seems to have ended abruptly during the second quarter of the 20th century when a loaded coal barge that was moored perpendicular to its head caught fire and sank, obstructing access to the dock. Through According to local accounting, including both personal memory and reference to past events, the consensus is that the barge sank during the 1920s or 1930s (Kenneth Keyes 2008, pers. comm.; Mark and Mabel McRae 2008, pers. comm.). An ongoing search of the *Daily British Whig*, however, has not confirmed the exact date of loss.

The remains of the barge, the Keyes Wreck, are situated in approximately 4 m of water contiguous with the Dawson Dock head at an angle of approximately 260° (Figure 8.11). The dock cribbing and barge timbers intermingle in some locations, and stone from the dock has fallen into the hull. The archaeological remains of the Keyes Wreck are depicted in the plan map Figure 8.12. The vessel measured approximately 41.7 m (136.8 ft.) between perpendiculars and 8 m (26.2 ft.) in beam. Despite being described as a “barge,” this vessel did not have the square section, scow ends, and hard chine often associated with barges. Instead it was double ended and had a relatively graceful curve leading back from the bow to the maximum beam, approximately one quarter of the way from each end. Its last cargo is still evident as coal lying within the hull. The remains are largely intact, with the hull complete to the turn of the bilge and the detached starboard side lying on the silty bottom adjacent to the hull. Zebra mussels (*Dreissena polymorpha*) and vegetation almost completely cover the remains, making it difficult to ascertain details. Despite these obstructions, it was noted that the hull was built of 5 x 15 cm (2 x 6 in.) exterior planking and 3 x 10 cm (1.2 x 4 in.) ceiling planking attached with iron nails and bolts to 20 cm (7.9 in.) molded and 10 cm (4 in.) sided frames. The frames appear to be made of single futtocks (Figure 8.13), which is unusual for Great Lakes vessels where double timbered frames were almost universal (Cooper 1993:10). The attitude of the wreck on the lake floor suggests that it is nearly flat bottomed, a common characteristic of lake vessels, which often had as little as 46 cm (18 in.) of deadrise (Cooper 1993:8). The east end of the vessel was interpreted as the stern due to the straight post at this end. The tops of both the internal and external stern posts were

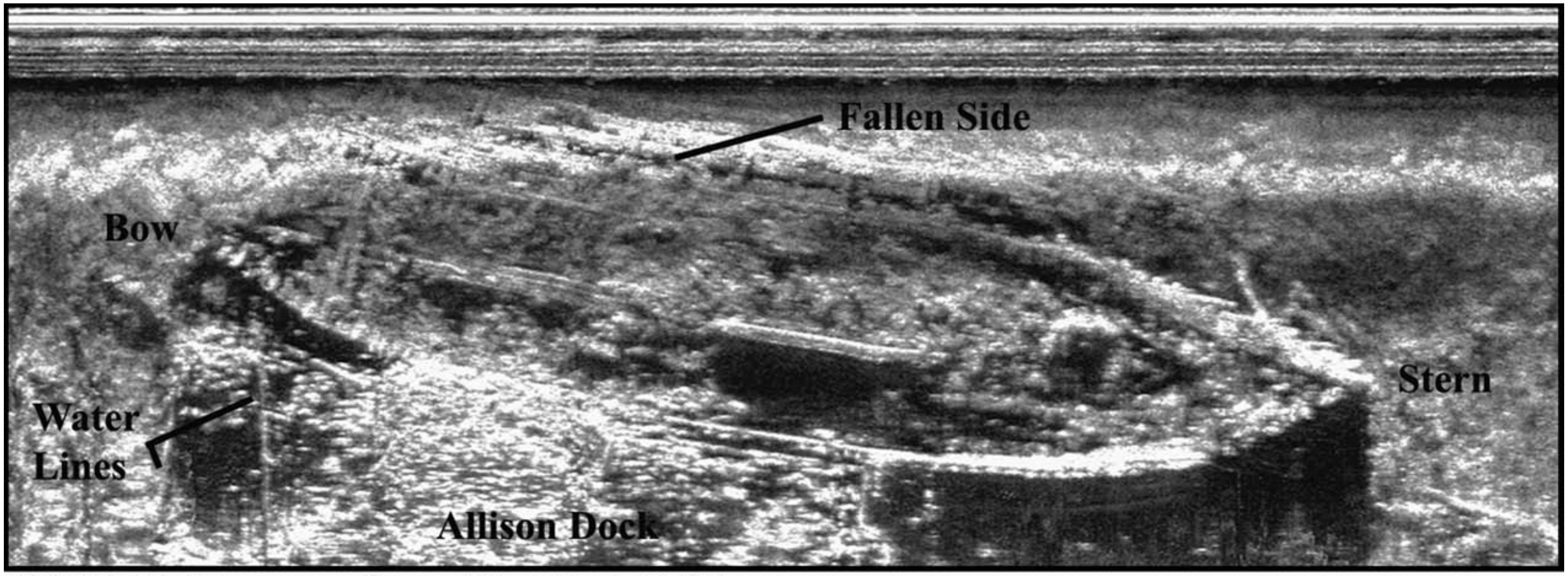

FIGURE 8.11. Side-scan sonar image of Keyes Wreck, Wolfe Island.

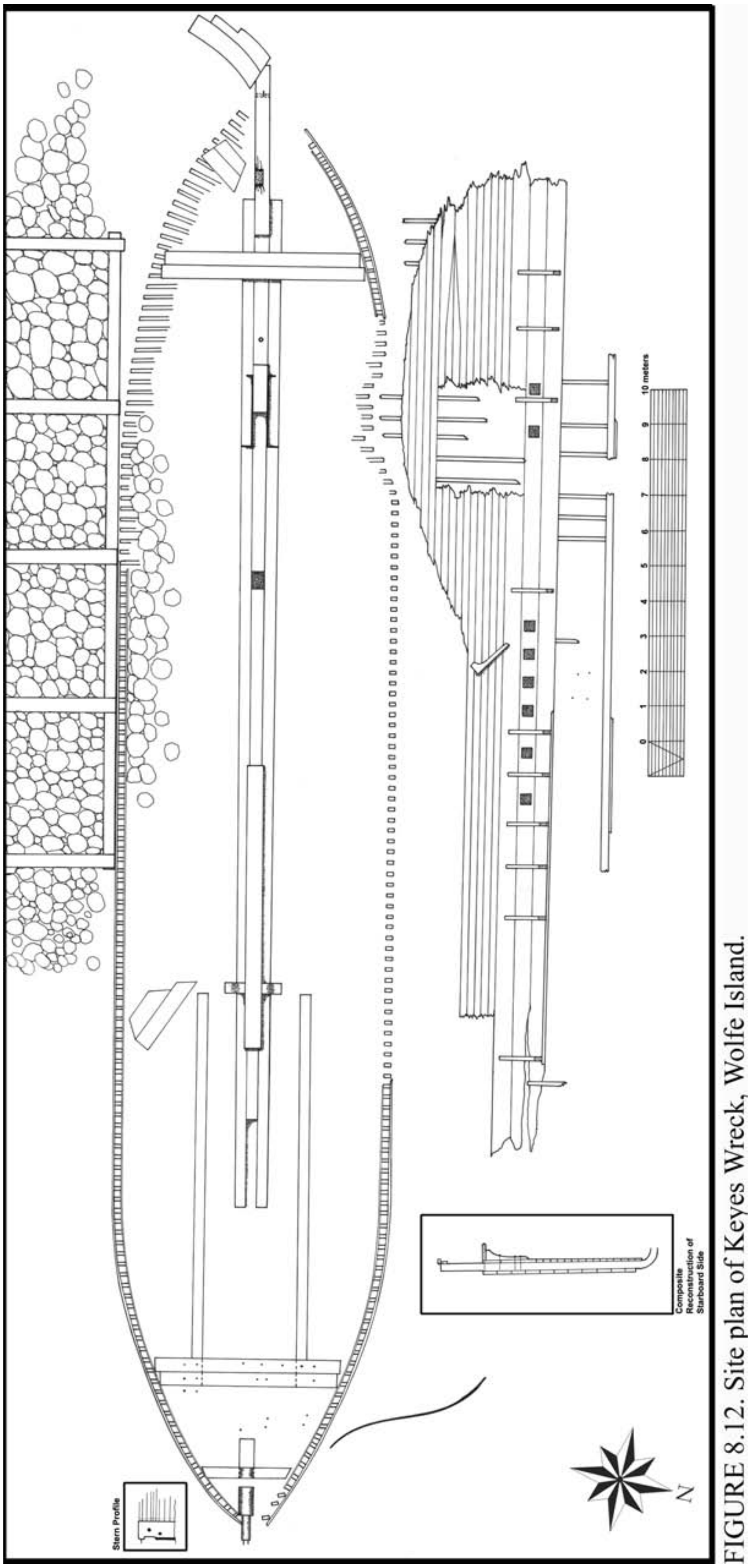

FIGURE 8.12. Site plan of Keyes Wreck, Wolfe Island.

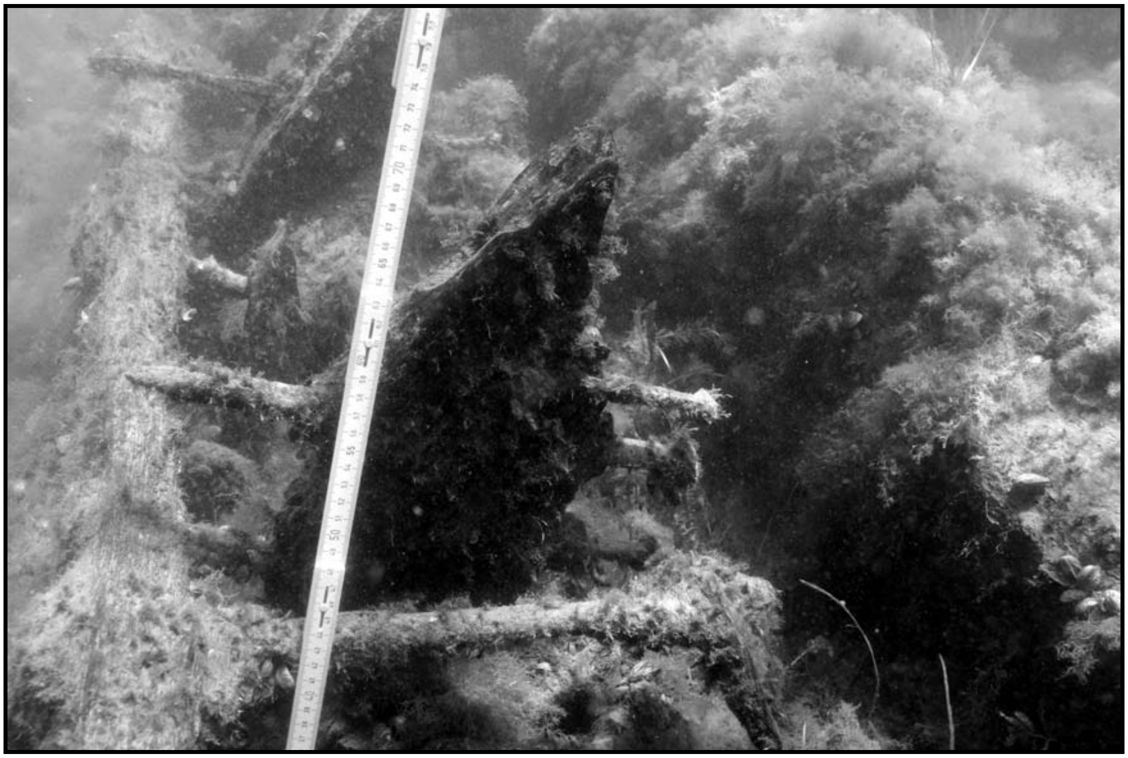

FIGURE 8.13. Representative frames above the turn of the bilge, port side, Keyes Wreck, Wolfe Island. View towards the east.

dished longitudinally (Figure 8.14). At the opposite end, the stem and a gripe lay to the side of the vessel at a 45° angle. It appeared that the stem was originally attached to the keelson by a 70 cm (27.6 in.) long flat scarf. A section of the apron was attached to the keelson immediately aft of the stem, and other possible apron timbers were lying just to port. The keelson measured 30 cm (11.8 in.) square and was flanked by two 30 cm (11.8 in.) square sister keelsons in the aft quarter. Additionally, the spine of the vessel was reinforced with a buttressed 46 cm (18.1 in.) square timber on top of the keelson offset to the stern of the vessel, and an additional 30 cm (11.8 in.) square rider keelson and iron braces closer to the bow. A gap in the keelson and a pipe protruding from the keelson were also noted. Paired riders at either end reinforced the vessel athwartship. These riders were constructed of two timbers each and measured 70 cm (27.6 in.) sided and nearly 1 m (39.4 in.) molded. Notably, the ends of the riders were cut to fit the bilges of the vessel. The aft athwartship riders contained several iron pins, some of which appeared to be threaded and had other holes that likely contained pins at one time. Similar pins also projected from the sediment abaft of the aft rider. Fasteners throughout the vessel appeared to be iron drift bolts for structural members and iron nails and occasionally bolts for planking. This heavy reliance on iron fasteners, rather than treenails, was common on the Great Lakes, where iron was more abundant than it was in other shipbuilding regions (Hall 1884:138; Cooper 1993:8).

The detached starboard side of the vessel is adjacent to the hull. The dimensions of this section suggest that the vessel once had a depth of hold slightly less than 4 m (13.1 ft.). The side was vertical or nearly vertical and had several approximately 30 cm (11.8 in.) square holes cut in the upper strakes. Immediately above these holes were the remains of a gangway supported by hanging knees and bolted to the frames. Above the gangway there appeared to be an open railing. Several iron fasteners projecting from the silt suggested that there may have been additional planking outside of the railing.

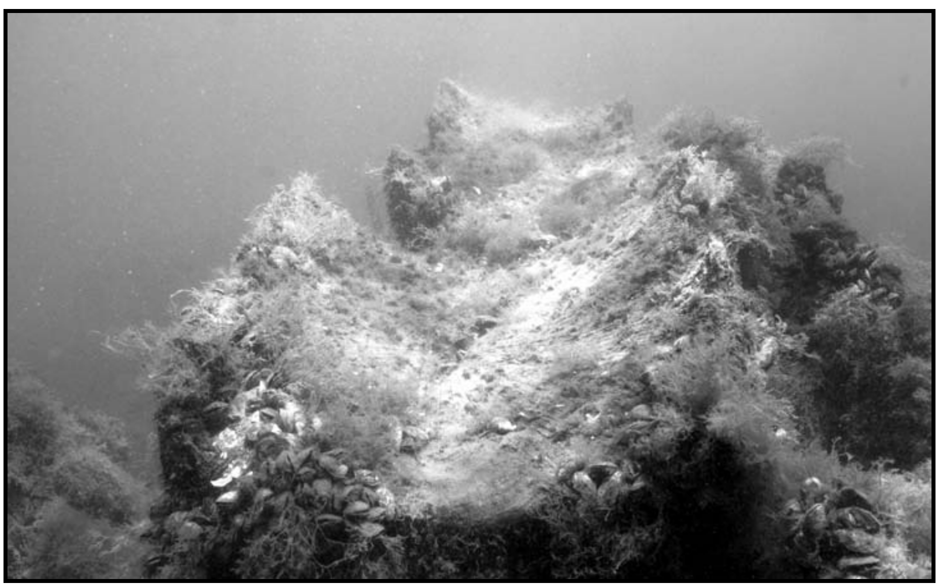

FIGURE 8.14. Dished upper surface of stern posts, Keyes Wreck, Wolfe Island. View towards the east.

Based on the dimensions of the hull, the vessel was almost certainly built to fit through the second Welland Canal (1845-1883) (Anonymous 1985; Peckham 2003; Labadie and Herdendorf 2004:5). This distinction does not, however, help to identify the vessel, which could be the remains of at least four different types of craft. As Winthrop Marvin (1902:398) noted, "The impress of the Welland Canal of seventy years ago is still visible on almost every wooden craft now afloat in lake navigation." It is possible that the Keyes Wreck was a barge, lake schooner, lake schooner converted to barge, or steamer barge.

Both schooner and purpose-built barge can be excluded with relative ease. Oral tradition holds that the vessel was a barge. Consequently, it is unlikely that the Keyes Wreck ended its days as a sailing vessel, despite the fact that some independent schooners remained involved in the coal trade during the 1920s (Anonymous 1926d). Similarly, the only possible surviving mast step, the gap in the keelson, was not in a location consistent with other archaeologically recorded Lake Ontario schooners of this period, such as the ***St. Peter*** (Peckham 2003). Conversely, while few early 20th century coal barges have been recorded, the shape of the hull and the size of the frames are more consistent with a sailing ship or steamer barge of the period (Labadie 1989:60; Rodgers 1995:15,23).

Further identification, however, is complicated by the evidence of modification throughout the hull. The large rider keelson abaft of midships may cover the remains of a centerboard, reinforcing the hole left in the hull when the centerboard trunk was removed. The portion of the keelson from forward of the gap to the location where the iron braces hold the smaller rider keelson may be a different form of patch for a second centerboard trunk. The existence of this patch, while less obvious, is supported by circumstantial evidence. Single centerboards were almost universally located forward of midships, although where two centerboards were present, one centerboard was often situated aft. Consequently, the Keyes wreck would be unique if the location of the centerboard trunk, patched with the large rider keelson, represents the only centerboard originally employed on the vessel. Both patches are within the range of centerboard trunk lengths for a vessel of this size (Labadie 1989:40,57). The location of the centerboards along the centerline of the vessel suggests that the ship was built after 1866, when the Board of Lake Underwriters ruled against centerboards offset to one side of the keel. This is not a fixed *terminus post quem*, however, because the transition began before the underwriters mandated it. Furthermore, the mandate applied only to U.S. built vessels, and the use of offset centerboards may have continued slightly longer in Canada (Cooper 1993:10; Moore 1995:54). As centerboards were used with both sail and steam, it is odd that the centerboards would have been removed from either type when the vessel was still operating under its own power (Labadie 1989:40,57; Rodgers 2003:39). It is possible that the centerboards were removed when the vessel was converted into a towed barge, or the trunks may have begun to leak as the vessel aged and it was determined to be easier to remove than to repair them. The latter scenario has been hypothesized for the Shoreham sloop in Lake Champlain (Kane 2009).

The holes in the vessel side similarly appear to be later modifications. The holes could once have held beam ends similar to the Lake Champlain North Beach wreck (Cozzi 2000). The positions of these holes, in discrete locations along the side and below the knees and gangway, suggest that they did not support a deck but rather held the sides of the vessel together while leaving sufficient openings to load and unload cargo. This arrangement is not common in either sailing or steam vessels where the deck beams generally both support the deck and provide transverse stiffness, but on the Keyes Wreck it seems to be an alteration, perhaps intended to strengthen the hull in preparation for carrying a heavier cargo than originally intended or in an attempt to continue using a tired hull.

These modifications lead to the conclusion that the Keyes wreck may have been a canal schooner converted to a barge, or else was a steamer barge that ended its days either modified but still operating under its own power or converted to an unpowered barge. The historical and archaeological records contain reference to both schooners and steamers converted to barges, so all of these scenarios would have been possible for a vessel of this period (Palmer 1987:20; Labadie 1989:143; Rodgers 1995; Labadie and Herdendorf 2004:5; Rodgers et al. 2006:17-20).

Steam barges developed ca. 1865 in Buffalo, New York as a result an adaptive reuse of passenger steamers idled by the 1857 Panic. While the passenger market never fully recovered because of competition from locomotives, there were sufficient bulk cargos to require steamers both to carry freight and to tow barges. Shortly thereafter, purpose-built steamer barges were produced to maximize cargo capacity and efficiency. These vessels eventually evolved into early bulk freighters and spread beyond the Great Lakes to become the steam schooners of the Pacific Northwest lumber industry. They were immensely popular in the bulk cargo trades, with approximately 800 built on the Great Lakes between 1865 and 1910. By combining the successful hull forms of the canal schooners with the innovation of steam propulsion, they formed a tangible link between sail and steam. (Labadie and Herdendorf 2004:8; Bazzill 2007:66). Their similar hull shapes, based on the need to transport bulk cargos through the restrictions of the Welland Canal, can make steamer barges and contemporaneous schooners difficult to distinguish archaeologically (Moore 1996b; Labadie and Herdendorf 2004:8; Bazzill 2007:64). The archaeological evidence, however, suggests that Keyes Wreck operated as a steamer barge for at least a portion of its life.

This evidence includes the athwartship riders, the bilge keelsons, the iron pins and pin holes near the stern, and the dished stern posts. Similar athwartship riders, with the recessed center and bilge-contoured ends of the main aft riders and the dished center of the aftermost rider, were recorded on the *Michael Groh* (launched 1867 at Cleveland, Ohio) (Labadie 1989:65). The aft riders were identified as part of the engine bed on the *Michael Groh*, but it does not seem to have included forward riders similar to those recorded on the Keyes Wreck. The forward riders may have been installed to reinforce the hull against the stresses of carrying bulk cargo. The bilge keelsons also likely helped to reinforce the hull in the vicinity of the engine. There are a wide range of longitudinal reinforcement systems in Great Lakes vessels, but all archaeologically investigated steam barges include bilge keelsons (Cooper 1993:10; Bazzill 2007:167). The presence of these keelsons only at the stern supports the hypothesis that this area required additional reinforcement, whereas on a sailing vessel the stresses would be spread throughout the hull. Direct evidence for the engine is provided by the pins and pin holes near the stern, consistent with engine mounts in steam barges (Labadie 1989:65; Labadie and Herdendorf 2004; Bazzill 2007). The position of the Keyes Wreck pins are consistent with the archaeological remains of the *Adventure* (launched 1875 at Detroit, Michigan and rebuilt 1897 at Sandusky, Ohio as a steam barge), which was powered by a small single cylinder steam engine and a 3.7-m (12-ft.) long boiler for its 31.7-m (104-ft.) hull (Labadie and Herdendorf 2004:7,50-51). Additionally, there is ample room for the boiler between the engine bed and centerboard patch. Finally, the dished top of the stern posts and aftermost rider would have allowed the shaft to pass through the hull, likely relying on a stuffing box to retain the integrity of the ship. The only evidence that runs counter to the interpretation of the Keyes Wreck as a steamer barge is its relatively light framing, especially at the stern. All archaeologically investigated steamer barges include triple or quadruple timber frames at the stern to support the added strains of a heavy and oscillating engine (Labadie 1989:64; Bazzill 2007:116). The Keyes Wreck appears to have single frames throughout.

There is relatively little direct evidence that the Keyes Wreck was still operating under its own power when it sank. The presence of the engine mounting pins at the stern suggest that the engines were removed after the vessel sank, as these pins would have obstructed cargo handling if allowed to remain without the engine in a converted barge. It is also possible that the vessel began its career as a schooner and was converted to a steam barge at a later date. The *John S. Parsons*, built as a schooner at Chaumont, New York in 1892, is instructive in this regard. In 1896 it was converted to a steam barge, only to have its engines removed in 1910 to be towed as a barge. It sank at the mouth of Oswego harbor in 1913 (Palmer 1987:20). Ample evidence of alterations to the Keyes Wreck hull makes a similar scenario difficult to rule out.

Just as the heavily altered hull of the Keyes Wreck is indicative of the commercial pressures on wooden ships during the early 20th century, the position of the wreck at the Dawson Dock is emblematic of the declining coal trade and the more general demographic and economic decline of Wolfe Island. At the same time that the amount of coal transported across Lake Ontario was waning the population of Wolfe Island was nearing its nadir. The attraction of urban employment was drawing away residents and the regular free ferry connection with Kingston lay several decades in the future. Consequently, when the Keyes Wreck sank at the Dawson Dock, blocking one of the major docks in Marysville, the cost of removing the vessel was found to outweigh the use of the dock and the profits to be made from it. The cargo was also not entirely salvaged. Bradley Rodgers (1995:26) noted a similar correlation between a vessel sunk at a dock and the economic decline of the related company on Lake Michigan, and Nathan Richards and Mark Staniforth (2006) have recorded associations between economic cycles and ship abandonment in Australia. The barge was not, however, strictly abandoned, but it was permitted to remain in what was quickly becoming an out of the way location at a time when other vessels were being removed from shallows near Kingston and scuttled in deepwater marine graveyards (Moore 1995, 1996a:9). In this way the barge was abandoned *ex post facto*, and with it a portion of the Marysville harbor. Intentionally abandoned vessels are generally left in peripheral areas so that they do not become navigation hazards (Richards and Staniforth 2006:90). Allowing the Keyes wreck to remain near the center of Marysville harbor suggests that the harbor was perceived as a peripheral place where the shallow wreck would not greatly effect lake shipping. The situation of the wreck marks the loss of a vessel that was no longer viable, carrying a cargo of declining value, to a port of limited importance. The docks, ship, and harbor were simply left behind by changes in technology and transportation. This kind of shifting landscape is likely repeated in locations throughout the Great Lakes and is indicative of the same modern era that brought industrialists to Carleton Island.

Carleton Island

Long before industrialist arrived, Carleton Island was utilized by a succession of Native Americans, French, English, Americans, and Canadians (Figure 8.15). Carleton

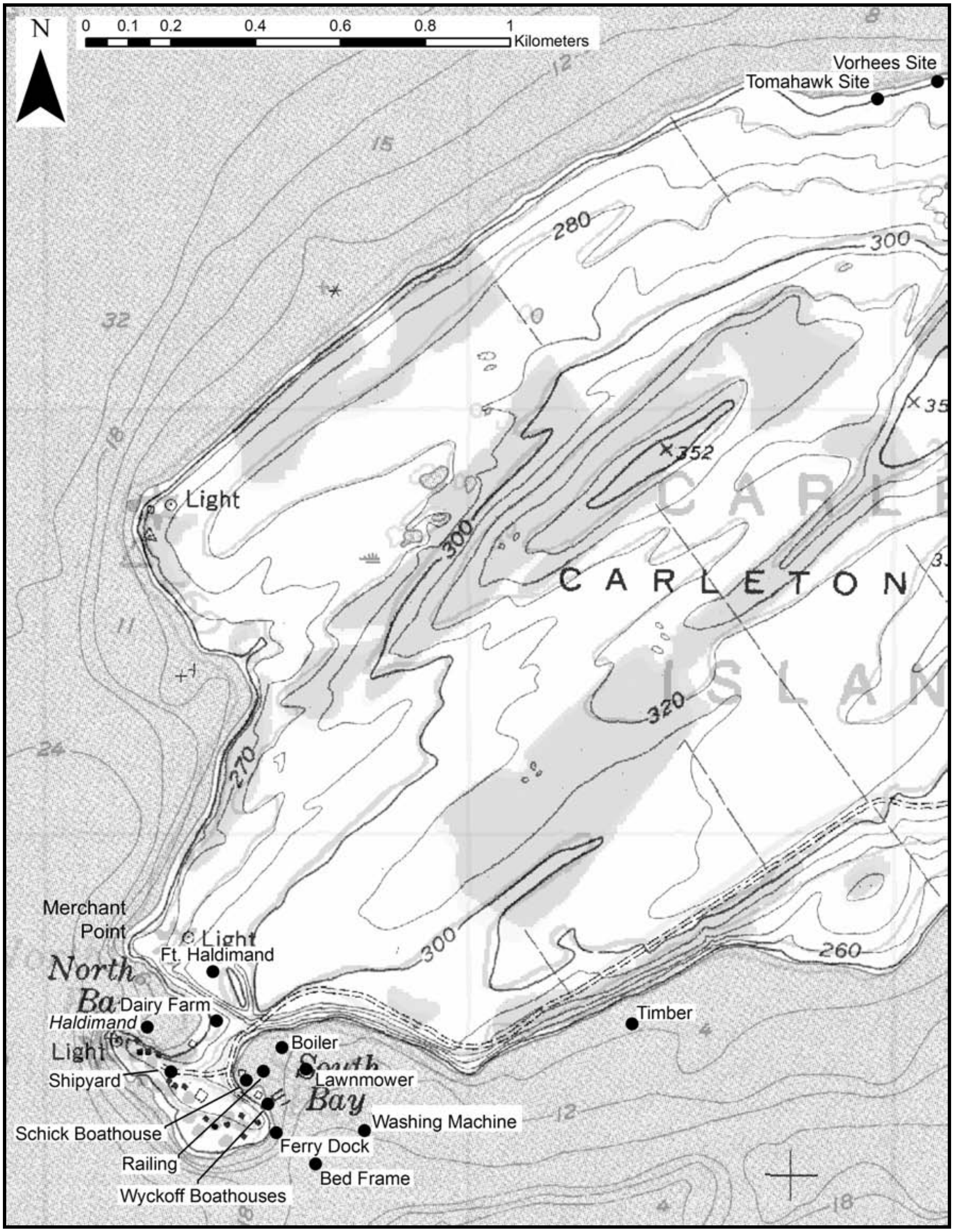

FIGURE 8.15. Carleton Island archaeological results.

Island may be the purest example of a cultural landscape identified in this study because it so clearly demonstrates the historical and cultural interaction between humans and the environment. It is also particularly interesting because it encapsulates many of the trends we see in other survey areas in a single location. Different groups used the same resources for widely different ends during the history of the island. There is evidence of Native American occupation, military use, agricultural and lumber production, early tourism, economic collapse, and finally the modern preservation ethic. The island, in tandem with Wolfe Island, also forms a tangible link between the U.S. and Canada with Native American routes touching on both, ferries connecting the mainlands and islands, and historical connections such as Captain David Alexander Grant, one of the early owners of Wolfe Island, who was stationed on Carleton Island during the American Revolution (Anonymous 1815; Smith 1997:29).

Island Development to 1778.

The island does not seem to have been intensively inhabited prior to the American Revolution. Residents and collectors did not report any pre-contact lithics and there are no officially recorded pre-contact sites on the island, although Native American ceramics may have been found near a stone-lined hearth or oven at the foot of the island (Charles Vorhees 2008, pers. comm.). The pedestrian survey undertaken as part of this project identified a single flake of Onondaga-like chert. There are also reports of a Native American cemetery along the island's north shore (Anonymous [1970]-b). This information suggests that Carleton Island was likely used as a burial location, rendezvous point, and wayside on the canoe and portage routes of the upper St. Lawrence River. It does not seem to have been as intensively settled as the mainland to the south or the much larger Wolfe Island to the north, possibly because the small island did not contain enough resources to support a long-standing community. It is interesting, however, as an example of the repeated cross-cultural reoccupation of a location, as happened throughout the Lake Ontario shore. A similar pattern occurred at many Iroquoian and Algonquin portage locations that were first adapted as mooring and trade sites by the French and then developed into harbors and towns by the British and Americans. At Carleton Island, the island's small size, which made the island possible to control, and its position near the confluence of the St. Lawrence River and Lake Ontario, likely made it attractive to first the French and then the British as a meeting place.

It is unclear when the French began exploiting Carleton Island as a rendezvous site, but by 1774 the British were using the head of the island as a transshipment location (Durham 1889:48; Casler 1906:27; Gibson 1999:28; Pippin 2005:38). The island was a convenient location to transfer goods from St. Lawrence River bateaux to Provincial Marine vessels and, before the 1777 ban on private shipping, to lake schooners. Small portions of the island were cleared, and warehouses were erected near the head to support this trade (Smith 1997:19; Gibson 1999:28). The British military also used the island for temporary encampments. The 8th Regiment of Foot built a fortified encampment on the northwest shore and Bary St. Leger's forces camped on the island enroute to the Mohawk Valley in 1777 as part of John Burgoyne's Saratoga campaign (Casler 1906:29; Thomas 1978:13; Gibson 1999:28). The British formalized the island's role as a military encampment and transshipment location in 1778, when they began construction of a fort and shipyard at the head of the island.

British Control, 1778–1789

William Twiss of the Engineers and John Schank of the Provincial Marine left Montreal on 28 July 1778 with orders to identify a location for and to begin work on a new fort and shipyard at the head of the St. Lawrence River. They quickly ruled out the old fort at Oswegatchie (Ogdensburg), leaving only Kingston and Carleton Island as obvious choices (letter from William Twiss to Brigadier General MacLean dated 8 August 1778, reproduced in Casler 1906:30). After inspecting both sites on 14 and 15 August, in a letter dated 17 August 1778 (reproduced in Casler 1906:33-34) they recommended Carleton Island for several reasons:

1) Carleton was easier to approach by vessels, which were necessary to control the lake and river. Bateaux approaching Kingston would have to cross open water against prevailing winds (Gibson 1999:29).
2) Kingston was easily commanded from the surrounding hills, while Carleton, being on an island, would be easier to hold. Carleton lay beyond the cannon range of the surrounding land and was provided with an 18 m cliff overlooking the bays (Pippin 2005:40).
3) Carleton was large enough to have gardens to supply the garrison.
4) Carleton contained plenty of timber for ship and barrack construction. Kingston had less.
5) Carleton had a better harbor in terms of depth and protection. The bays at the head of the island could accept vessels up to approximately 3.6 m draft (Gibson 1999:30).
6) Carleton was better as a transfer point in terms of location and shipping patterns.
7) Carleton appeared to be a healthier location for a garrison.
8) There was very little current at Carleton and therefore little threat from ice drifts.

As is clear from these considerations, the new St. Lawrence installation was conceived of as a permanent and important component in the British plan to control Lake Ontario. This intent and the multiple roles to be played by Carleton Island are summarized in a 14 October 1778 letter from General Frederick Haldimand announcing the establishment of the fort to Secretary of State Lord George Germaine:

> I sent Mr. Twiss of the Engineers with Capt. Aubrey and three Co.'s remaining of the 47th Reg't in Canada, a detachment from Sir John Johnston's Corps [KRRNY], together with a body of Artificers to establish a Post at the entrance of Lake Ontario to serve the purpose of a safe place for the traders to send their goods to, which go from Montreal in Boats, till the Kings vessels now the only craft allowed to navigate the Lakes can be spared from their more urgent services, to transport them to Niagara, a secure harbor for these vessels, and a defence against the

> enterprises of the Rebels upon this province by that great avenue into it [St. Lawrence River]. I also sent up with the same party Lieut. Schank of the Navy, who has been employed upon Lake Champlain, and is the Commissioner of the Dock Yards, for the benefit of his judgment with regard to the best places for a Harbor, and with orders to construct as soon as possible for that Lake a number of Gun Boats which are so useful in many respects. (reproduced in Durham 1889:60)

The artificers mentioned by Haldimand included 27 ship carpenters and a few engineers, as well as several women. The troops, under the direction of Twiss and the engineers, began work on the fort, and in a 17 August 1778 letter Twiss proposed that the fort be named after Haldimand and the name of the island changed to "Carleton" (Casler 1906:33-34; Smith 1997:22-23; Gibson 1999:1). In addition to the defenses of the fort (a Vauban-influenced ditch-and-rampart system), barracks, storehouses, a saw pit, a lime kiln, and a building housing carpenter and blacksmith shops were erected. A bakery was added later in the year (Casler 1906:39; Smith 1997:23-24).

Fort Haldimand, Fort Niagara, and the ships that shuttled between them gave the British effective control of Lake Ontario and by extension much of the interior of North America. Oswego, conversely, was not strongly fortified, which left the Iroquois unprotected and the inland portions of New York open to settlement and movement by rebel colonists. The three campaigns that originated on Carleton Island were largely aimed at addressing this gap in control. In 1779 Sir John Johnston led the King's Royal Regiment of New York in an abortive attempt to support the Iroquois in the Mohawk Valley after they suffered substantial losses to John Sullivan's troops. Similar retaliatory raids from Carleton Island continued over the next two summers. Johnston also embarked from Carleton in 1780 on an attack into the Oswego Region. Finally, Major John Ross, then commander of Carleton Island, launched a coordinated attack into central New York with the Fort Niagara garrison in 1781 (Pound 1945:103; Gibson 1999:67).

The island’s population fluctuated with strategy and season but regularly included more than 1,000 Englishmen, Lowland and Highland Scots, Irish, Germans, Americans, Canadians, Algonquin-speaking Mississaugas, Iroquois-speaking Six Nations, and free and enslaved people of African descent. This mixed population inhabited the same island but not always the same spaces (Gibson 1998, 1999:2,34,36; Pippin 2005). For example, the Native American encampments were positioned away from the fort and shipyard, both because the British feared arson and other treachery and so they could serve as an alarm in case of an attack on an unprotected part of the island. The Native American encampment seems to have been separated from the fort by a barrier of trees, which formed a natural fence and visual break between the two cultural spheres of the island, reinforcing their fundamental differences in a way plainly perceptible to both sets of allies (Gibson 1999:43,44).

The Native Americans were not the only residents of the island who lived outside the fort and at least partly beyond army control. The shipyard and naval station on the low ground flanking the two bays at the head of the island were largely autonomous, with the Naval Department controlling its own tools, men, supplies, and housing (Gibson 1999:39). Neither was the Naval Department answerable to the Royal Navy. The name, however, implies that Haldimand perceived the department as adopting Royal Navy standards and procedures, and this perception was brought into reality by the employment of several shipwrights trained at the Royal Navy dockyard (Smith 1997:35; Gibson 1999:17,60). The shipbuilding component of the Naval Department at Carleton Island was known as the “Land Service” and consisted of nearly 80 men in 1778. The Service employed shipwrights, sawyers, carpenters, blacksmiths, artificers, laborers, sailmakers, riggers, boatmen, and a surgeon (Gibson 1999:60).

The naval yard was functionally the center of the island, while the fort, attached to the naval yard by a path partly carved into the bluff above South Bay, played a largely supporting role (Gibson 1999:31; Pippin 2005:40). The most visible landscape feature today, Fort Haldimand was present primarily to protect the bays and to control the island so that transshipment could proceed unmolested and the shipbuilders could focus their attention entirely on producing ships and gunboats. These vessels were the primary mechanisms of British control on the lake. Both southern Ontario and northern New York were sparsely populated at this time, so ultimate control of the land was untenable for either side. Lake Ontario, on the other hand, provided a pathway for commerce and communication that extended effective control to the lake shore if not farther inland through the ability to launch raids. The lake could be dominated by whoever controlled the largest number of ships. British supremacy remained unchallenged throughout the war through the production of ships to carry goods, supplies, and men across the lake and gunboats to patrol the St. Lawrence and Lake Ontario shores. Carleton Island figured prominently in the production of these vessels from the outset, replacing Navy Hall at Niagara as the Provincial Marine headquarters in 1778 (Gibson 1999:60).

Ship construction at Carleton Island started within days of the army officially taking control of the place. Whaleboats or bateaux for raids on the Oswego River and Mohawk Valley were begun in August 1778, and gunboats were under construction by that winter. Armed with a 12-pound cannon in the bow, each gunboat was 18.3 m (60 ft.) long and two masted with either a lug or lateen rig, depending on the vessel. These were intended to escort bateaux from Oswegatchie, but one was temporarily stationed at the foot of the island to help fend off raiding parties after troops and artificers began disappearing from the island (Casler 1906:58,64; Smith 1997:29; Gibson 1999:61). The shipyard also produced the 226-ton snow *Ontario* and the similarly sized ship *Limnade* in 1780 and 1781, respectively (Smith 1997:57; Gibson 1999:61; Malcomson 2004:26). Additionally, the naval yard was responsible for maintaining the British fleet on the lake (the *Haldimand*, *Caldwell*, *Seneca*, and *Mohawk*), and a detachment from the island undertook to chart various portions of the lake (e.g., Kingston to Carleton Island and Irondequoit Bay), further extending British control through the safe use of ports (Gibson 1999:61,65; Malcomson 2004:26).

The navy yard facilities included carpenter and blacksmith shops, saw pits, timber yards, and a ropewalk on the lowlands and a substantial pier on Aubrey Head in Schank Harbor (North Bay). The sloop *Caldwell* aided the construction of the pier during the winter of 1778 (Casler 1906:72; Smith 1997:35; Gibson 1999:32). The head of the island contained a naval artificers' barracks with a rigging loft on its upper floor. This building burned during the winter of 1781 but may have been rebuilt; in 1889 J. H. Durham reported a single chimney near where the neck joined the head of the island (Durham 1889:113; Casler 1906:106). The only other structure on the point likely to have had a chimney was the blockhouse built in late 1779; the blockhouse, however, was located on the westerly point (likely Aubrey Head). Added to protect the shipyard, the blockhouse was supplemented by a stockade around both points and the neck during the winter of 1781 (Casler 1906:68,105; Smith 1997:40; Gibson 1999:32). Additional protection for the navy yard was provided by at least three cannon stationed on the bluff to cover the bays and points upriver (Pippin 2005:41).

Also outside the fort but instrumental to the importance of Carleton Island were the facilities at Merchants Point. With the end of private shipping on the lake in 1777, Carleton Island became the "great depot of provisions for the upper posts" (letter from Captain Mathews to Nathaniel Day dated 17 February 1780, quoted in Gibson 1999:3). Bateaux traveled up the St. Lawrence River from Montreal to Carleton Island, where their cargos were offloaded and stored until a naval vessel was available to transport them on to Fort Niagara, from which point they were further distributed to the upper lakes. A considerable amount of supplies also stopped at Carleton Island. Each person on the island consumed approximately 15 pounds of food per week, a portion of which was shipped up the St. Lawrence River. Between April and November an overage of 34 military supply bateaux arrived at Carleton every week. An additional 260 merchant bateaux arrived annually (Gibson 1999:57,59). Clearly, a substantial amount of material passed through Carleton Island and the protected transshipment location was as important to British control of the interior as command of the shipping routes.

The fort commanders perceived the merchants who facilitated this transshipment as something of a necessary evil. Their stores were kept separate from the fort because excessive alcohol consumption appears to have been a problem among some residents, and on low ground so as not to interrupt the fort's field of fire (Casler 1906:46; Gibson

1999:45). A similar arrangement was employed at Fort Niagara, where traders, merchants, artisans, and many of the soldiers lived in a low-lying area known as “the Bottoms” that also served as the transshipment node for goods proceeding around the falls to the upper lakes (Scott 1990; Knoerl 1994). Merchants Point on Carleton Island, however, seems to have been more heavily fortified than the Bottoms and may have made use of a former fortified camp erected by the 8th Regiment of Foot (Gibson 1999:45).

Merchants Point was an active location, with several independent merchants operating stores, including Robert Hamilton, Archibald Cunningham, Alexander Campbell, Robert Macaulay, Richard Cartwright, and Hugh Mackay, whose wife, Mary, was the garrison commissary, a civilian officer under the Quartermaster General, in charge of supply, bread, pay, movement, and purchases of non-military stores (Angus 1956; Burleigh 1973:92; Smith 1997:25; Gibson 1999:74,78). Some of these merchants eventually became leading businessmen. Richard Cartwright, for example, served as Colonel John Butler’s secretary (Butler’s Rangers) from 1778-1779. While at Fort Niagara, he formed a partnership with John Hamilton, a major merchant at Niagara, and moved to Carleton in 1780 to establish a store as part of Hamilton’s enterprise. Cartwright and Hamilton later dissolved their partnership but remained in business together, eventually building substantial commercial empires at Kingston and Niagara/Queenstown (Cartwright 1968:41-42; Gibson 1999).

One difficulty with Merchants Point was that Merchants Cove, as the word “cove” implies, does not seem to be sufficient to protect lake-going vessels. The name of the cove suggests that it served a mercantile purpose and was likely a location for unloading bateaux. Since the cove was not suited for larger vessels, transshipment did not likely occur there. Merchants Point, moreover, lacks direct shore access to Schank Harbor (North Bay), so transshipment would have been difficult there as well. Schank Harbor was the primary military harbor on the island, as indicated by the historical record and the presence of the pier at its mouth. It is possible that there was a crane or some other basic facility allowing goods to be loaded into ships from Merchants Point, or the transshipment system may have been more complicated. Goods for consumption on the island could have come into Merchants Cove, where they were easily transferred to stores on Merchants Point, while goods that were to be transshipped to Niagara could have been offloaded at Government Bay. R. A. Preston (1954:4-5) makes the unsupported claim that one of the bays of Carleton Island was used for naval vessels and the other for merchants. There is also mention of a “lower store” accessible by bateaux in a 1781 letter from Major John Ross to Frederick Haldimand (reproduced in Casler 1906:88). This store may be the structure that appears on the shore of Government Bay in Ferdinand Hassler’s 1823 map of the fort and outbuildings (Casler 1906:21). Goods unloaded from bateaux in Government Bay could have been stored nearby until a government vessel (hence the name of the bay) was available to carry them. Regardless of the actual transshipment process, the merchants of Merchants Point seem to have controlled most of the through-lake trade because many of the goods bound for Niagara were for private consumption. Furthermore, the relationship between Cartwright and Hamilton is clear evidence of Carleton merchant involvement in the forwarding trade.

The historical distinctions between Schank *Harbor* and Government *Bay* are also noteworthy, as both bays provide protection from the predominant winds, but their names, as well as the historical and archaeological records, suggest that Schank Harbor was the more heavily utilized of the two. A bay is a natural indentation in the shore, larger than a cove but smaller than a gulf, while “harbor” implies an anchorage and often artificial improvements. There are several reasons that Schank Harbor was the focus of naval activity at the island. Schank Harbor is directly under the guns of Fort Halidmand and would have been the better protected of the bays. Additionally, a rock ledge was noted during diver surveys near the center of Government Bay. This ledge did not appear to project enough to greatly effect ships entering the bay, but the survey was conducted during a period of high water and the ledge may have been more pronounced during the 18th century due to lower water. The relationship of the bays to the New York shore may have also been a consideration in Schank’s choice of a harbor. Government Bay is clearly visible from New York, so that all of the activities in the bay would have been observable by spies stationed there. Schank Harbor, conversely, is tucked behind the head of the island and faces the sparsely populated Wolfe Island, then under British control. Additionally, rushes grew between the island and the New York shore; these would have done little to shield activities in the bay but would have permitted raiding parties to sneak close to the bay and possibly burn vessels under construction (letter from Frederick Haldimand to Captain MacDougall 31 May 1779, reproduced in Casler 1906:64). Attacks on Schank Harbor would have been more exposed and easier to guard against. Like most of the Revolutionary War landscape of Carleton Island, the position of the shipyard and differential use of the bays were the products of careful planning to achieve strategic and tactical goals.

The final major aspect of the military occupation of Carleton Island within the vicinity of the survey area was the King's Garden (there were 30 soldiers stationed well away from the survey area on the northeast shore of the island to protect labor parties; Gibson 1999:32). The garden was the least protected aspect of the military operation and also the least strategically imperative, given the British military's ability to readily import food to the island. The Carleton Island garrison was not self-supporting, but, in an attempt to limit the amount of food that had to be brought to the island, Joseph Franklin was employed to develop a piece of land on or near the broad triangular point on the south side of the island (Marjorie Crothers 2008, pers. comm.; Hough 1854:110; Gibson 1999:33). Franklin began with a small herd of cattle, a grove of fruit trees, and perhaps a few acres under cultivation in 1778, and in 1779 he was managing 12.1 hectares (30 acres) of potatoes, turnips, and other produce. The next year, the farm had purportedly grown to 60.7 hectares (150 acres). Franklin was given a house near the farm, access to horses, and a contingent of men from the garrison to help work the fields (Casler 1906:40,44; Smith 1997:24; Gibson 1999:33). Naval officers, seamen, and naval artificers were initially (April 1779) permitted to plant gardens on the open land of Government Point, making them independent from the King's Garden and reinforcing the Naval Department's general independence from the fort as a whole. The next year, however, they were ordered to move their gardens off the point. The wording of the command leaves it unclear whether they retained separate gardens or if their gardens were to be subsumed under Franklin's control. The order does, however, suggest that the land was needed for other uses and that the shipyard may have been expanding operations at that time (Casler 1906:46,72).

The need for Merchants Point, the shipyard, Fort Haldimand, and the King's Garden persisted until the end of the American Revolution. With the end of the war, British requirements in the area were reevaluated, as was the port of Kingston. Settlement and town planning were now concerns; Kingston had ample room to lay out a town, and the shores that during the war did not contain enough timber for shipbuilding were viewed as natural meadows ready to be cultivated during peacetime. Carleton Island had been the preferred location to preserve the status quo of the 13 colonies through military control, but Kingston was a better site to plant the British flag and win the region through settlement of a Loyalist population. There was also the concern that Carleton was part of the U.S. based on the boundary described in the Treaty of Paris (Gibson 1999:11,109).

Major John Ross was ordered to leave Oswego for Cataraqui (Kingston), and the commander of Carleton was ordered to provide artificers, workmen, and supplies to rehabilitate and develop Kingston. Major Harris of the 84th Regiment of Foot transferred the administrative aspect of Fort Haldimand to Kingston during the summer of 1783. The moves from Oswego and Carleton effectively ended British control of these locations, although they did not relinquish their claims for several more years (Stewart and Wilson 1973:37). Harris and Ross were also ordered to send "even such Houses and Sheds, as can be moved easily from Carleton Island to Cataraqui…" (letter to John Ross 30 June 1783, quoted in Stewart and Wilson 1973:37). Following these orders, five buildings were purportedly transferred from Carleton Island by raft or over the ice (Stewart and Wilson 1973:100; although Smith 1997:83 claims that only three were transferred). The merchant Macauly rafted his home from Carleton to Kingston and placed it at the corner of Princess and Kingston streets. This structure was demolished in 1928 (Cooper 1980 [1856]:25; Smith 1997). The Lyon House, which burned during the

20th century, was also alleged to have been brought over from Carleton Island (Susan Bazely 2008, pers. comm.). Finally, the Stewart Cottage (Figure 8.16), standing at King and Gore streets was likely transported from the island and is the only standing evidence of what structures on the island looked like (Angus 1955:4; Stewart and Wilson 1973:100).

The Stewart Cottage formed a physical link between the ports of Carleton Island and Kingston, but their less tangible economic link was even stronger. The merchants followed the structures and the trade and continued their transshipment business at Kingston (Stewart et al. 1988b:38-39). They also maintained their connections with Niagara, which continued to develop with plenty of land on the west side of the river for settlement and crops. As lake trade bloomed following the war, so did Kingston and Queenstown (Niagara-on-the-Lake), continuing their established roles as transshipment sites at either end of the lake.

FIGURE 8.16. Stewart Cottage, Kingston.

Sometime after the majority of the Fort Haldimand garrison moved to Kingston, a vessel was scuttled in Schank Harbor (North Bay) (Figure 8.17). The wreck measured 22.3 m (73.3 ft.) by 6.6 m (21.5 ft.). The bore diameters ratios of recovered pipe stems suggested a date of the mid- to late 1770s (Murphy 1976b:10, 1976a:19). It seems to have been scuttled in the bay prior to 1810, a conclusion based on the large number of rocks in the hull, the presence of an apparently intentional hole in the lower hull, and its first appearance in the cartographic record at that time (Gray 1810; Murphy 1976b:1,10,14, 1976a:13). It is odd that the vessel was sunk in the bay rather than just beyond it, where the water is deeper and the hull would have presented no danger to navigation. Perhaps Schank Harbor offered a well-known but relatively inactive location to temporarily deposit a vessel that someone intended to re-float, but no documentary evidence supports this hypothesis.

FIGURE 8.17. North Bay Wreck, probably *Haldimand*, Carleton Island. View towards the northeast with 1970s grid in the background.

Because the vessel is visible from the surface and there is no definitive oral or documentary evidence regarding its identity, it has been misidentified several times. Richard Van Gemert (1972:300-301) confused the wreck with *Halifax,* and Van Cleve (1877) believed it was the hull of a French vessel, a mistake that, as late as the 1970s, vied with "barge" and "lumber schooner" for preeminence among the speculated identifications (Murphy 1976a:11; Anonymous 1995). The wreck was partly excavated and mapped in plan during 1975. This fieldwork was accompanied by a documentary search that led to a "strong indication that it was the *Haldimand*" (Murphy 1976a:14). Built in 1771 at Oswegatchie and measuring 23.2 m (76 ft.) on deck, the snow *Haldimand* regularly ferried troops and goods between Carleton Island and Niagara. By the end of the war it was an aging vessel. It was laid up during the 1777 sailing season because it was too dilapidated to sail, and it reportedly sank in the St. Lawrence River during November 1780, killing one man (Smith 1997:131-132; Gibson 1999:58). Despite these incidents, *Haldimand* continued to see some service until 1785 when it was last mentioned in the historical record (Malcomson 2004:26). A full recording and reconstruction of *Haldimand* is warranted, given how little is known about 18th century ship construction on the Great Lakes. The wreck would also benefit from comparison with the remains of *Iroquoise* (*Anson*), dating to the French and Indian War period and recorded by the St. Lawrence River Historical Foundation during the 1990s (McCarthy 2003).

Taken together, the shipwreck, dock, and fort (NYSOPRHP site number A045-05-0001) nicely summarize the mechanisms of British control on Lake Ontario during the American Revolution. Strategy and infrastructure allowed Britain to control all of the lake and much of the shore during this period. By commanding the water and providing protected locations to dock ships and transship goods, the British excluded the rebel colonists from the lake and did not permit them to prey on the ships at their weakest, close to shore. Additionally, the area is scattered with Revolutionary War period artifacts. Schank Harbor has been a favorite hunting ground for souvenir-collecting divers for at least three decades.

Much material from the fort, including several cannon, was thrown into the bay during the occupation of the island and at the time of its abandonment. A similar pattern of waste disposal was also common near Navy Hall at Niagara (Lockard and Gilchrist 1983). These artifacts provide additional information about daily life at the fort, as does the work of Doug Pippin (2005) within the bounds of the fort. There is a significant amount of subsurface archaeology still possible on the island. The shipyard and Naval Department buildings are likely partly preserved under and around the farmstead site and standing homes at the head of the island, and Merchants Point is likely to contain physical evidence of the variety of materials entering the interior during the war.

19th-Century Extractive Industries and Agricultural Development

The British did not simply abandon Fort Haldimand at the end of the war but maintained a token garrison there until the War of 1812. Even so, the fort began to decay almost immediately. When Patrick Campbell (1987 [1793]:70) went ashore on Carleton Island in 1793 he found a sergeant and 12 men stationed at the fort to prevent the structures from being burned. Campbell also noted that the barracks, ditch, and rampart were badly deteriorated. A similar contingent of men was maintained there into the 19th century, and by ca. 1808 they had been joined by a sizeable population of fishermen (300-400 total) living in small structures along the shore. At approximately the same time, the U.S. decided that Carleton Island would be an excellent location for a revenue station, a decision prompted by the 1807 Embargo Act, but the administration in Kingston rebuffed the notion because the British still maintained a garrison on the island (Casler 1906:116-122). It was not until the beginning of the War of 1812 that the U.S. seized Carleton Island; or rather three U.S. citizens seized Carleton Island. Abner Rogers, his son, and a neighbor rowed to the island and took the fort from the sergeant, three soldiers, and two women stationed there. The fort was then burned, either by Rogers or by British soldiers sent from Kingston to dismantle the fort following the American "attack" (Durham 1889:40; Casler 1906:125; Thomas 1978:41; Gibson 1999:110). The island officially became U.S. territory in 1817 (Gibson 1999:110).

In preparation for this ownership, the U.S. government granted 202.3 hectares (500 acres) at the head of the island to William Richardson as a military class right at the end of the Revolutionary War. Richardson sold this right to Matthew Watson and William Guilland in 1786, at which time the land commissioner added the caveat that the class right was void if the island was determined to be in Canada. The head of the island passed through a few other owners before being acquired by Charles Smyth in 1821 (Hough 1854:109; Casler 1906:125). The class right or other transactions leading up to Smyth's ownership seem to have included the bottomlands of Schank Harbor and Government Bay (North and South bays) as part of the land parcel. This ownership has persisted to today, making the submerged portions of the bays exceptional in being privately owned bottomlands.

Smyth seems to have acquired the land as an investment, as that same year there was a complaint of "depredations being made upon the timber" of Carleton Island (Hough 1854:110) and Avery Smith and his partner Abijah Lewis began legally harvesting timber on the island (Van Cleve 1877:100; Durham 1889:122). Smith and Lewis's was not the first extractive industry on the island; stone for the first stone house in Cape Vincent, built for Vincent Le Ray, was quarried on the island in 1815 (Casler 1906:174). It did, however, lead to one of the first semi-permanent settlements on the island and caused an early population boom similar to that on Wolfe Island. The fishing community seems to have dissipated with the War of 1812, and by 1821 there were only 12 families living on the island when timbering began. Two years later there were approximately 200 residents. The island supported a tavern, school, cobbler, justice of the peace, and three merchants, and there were many homes built within the fort so as to make use of the chimneys left standing after the barracks were burned. The bays at the head of the island were used to raft timber. This practice may be the source of a timber stick identified near the mouth of South Bay. The timber industry on Carleton was short-lived, however, and was in decline by 1824 as the island became denuded and the growth of Cape Vincent siphoned off the island population (Durham 1889:122; Casler 1906:111).

FIGURE 8.18. Representative artifacts from the Vorhees Site, Carleton Island.

Possibly dating to this period is the Vorhees Site identified by Charles Vorhees, a local artifact collector. The site included door hardware, an axe head, shell-edged, transfer-printed, and mocha ceramics, scissors, bottle and drinking glass, nails, pipestems, and cutlery that suggest that the site was a domestic structure inhabited for a sufficiently long period of time to accumulate a wide range of debris (Figure 8.18). The site also included a collection of British military and civilian buttons and several coins recovered from an approximately 9 m^2 area around a few flat stones. The stones were surrounded by ash and could have been the remains of a chimney base. No other evidence of a foundation was noted by Vorhees. The buttons suggest that the inhabitant may have been in the British military or, as the collection represents an array of British regiments, he or she may have taken advantage of a post-war glut of military clothing. Vorhees reported finding buttons marked with anchors and cannon, but only insignia from the Royal Highland Emigrants (84th Regiment), 21st Regiment of Foot, 68th Regiment of Foot, and 71st Regiment of Foot, and one unidentified unit were included in the collection available for inspection (Figure 8.19).

The 84th Regiment was stationed at Fort Haldimand for the entirety of the fort's use. This particular button belonged to an enlisted man's uniform and dates to 1776-1778 (Troiani 2001:72-3). The 21st Regiment arrived at Quebec in 1776, was taken prisoner at Saratoga, and returned to Britain in 1781. The 21st was also present in the U.S. during the War of 1812 but served primarily in the Chesapeake and Southern theatres. The 21st Regiment button belonged to an enlisted man and was cast between ca. 1775 and 1782 (Troiani 2001:32-33). The unidentified insignia, which appears to be a flaming grenade-shaped badge, may also be associated with the 21st. These badges are often associated with fusilier units and the full name of the 21st was the "Royal North

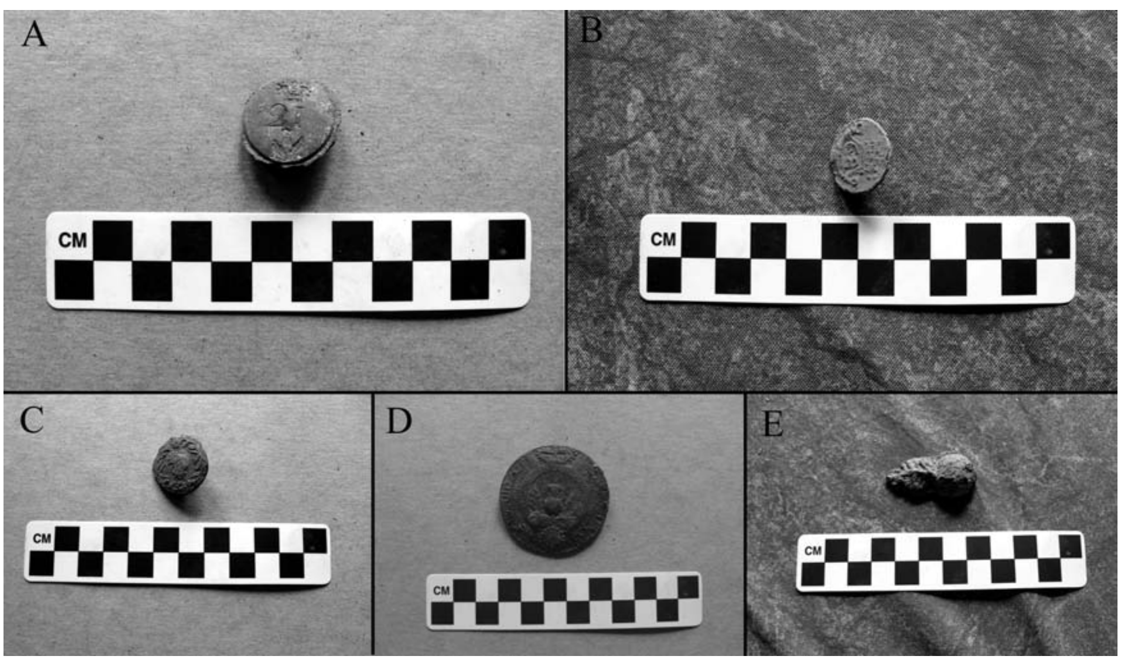

FIGURE 8.19. Military buttons from the Vorhees Site, Carleton Island. A: 21st Regiment, B: 68th Regiment, C: 84th Regiment, D: 71st Regiment bonnet badge, E: unidentified grenade badge.

British Fusiliers." The 71st Regiment arrived at New York in 1776 and served in New York during 1776, before being assigned to Virginia and the Carolinas with Cornwallis. Part of the unit surrendered at Yorktown and the remainder departed Charleston in 1782 (Kemp 1973:13,31,63,66; Troiani 2001:68; Henderson 2009). The 68th Regiment was in North America in 1770 but departed before the war and spent most of the 1770s in Ireland (Petvin-Scudamore 2009). With the exception of the 84th, none of these units seems to have ever been stationed on Carleton Island. The presence of the 68th button and the fact that the other regiments left the U.S. during the later years of the war suggest that the site may have belonged to settlers who emigrated to the area from the British Isles after the war, bringing surplus clothing with them or having collected surplus items available in North America after their arrival. Douglas Pippin (2009, pers. comm.), who reports seeing several buttons from Carleton Island that belonged to units never stationed on the island, states that in addition to the possibility of surplus, clothing was sold and traded between soldiers or moved with soldiers when they changed regiments without changing uniforms. Don Troiani (2001:89-91) also pointed out that Americans regularly wore seized or captured British uniforms, sometimes dyed a different color, but nearly always with the original regimental buttons attached. These explanations are further complicated by the 71st insignia, which is a bonnet badge rather than a button, although these items may have also been sold as surplus. It is also possible that the association of these insignia is related to Vorhees' curation technique, wherein all materials are grouped together in bags and boxes, so that it is not certain, beyond his memory, that all of the items were excavated from the same location. This possibility is further reinforced by the inclusion of boundary marker in the collection bearing the names "Edward Mafter" and "Burford Car_ _ er," neither of whom is currently known to have owned property on the island.

The collection also included three non-military buttons. One was of the hollow, cast, semi-spherical variety. The other two were plain-front disks with the back marks "Standard Gilt" and "Very Best." Back marks generally date after 1790, but examples have been found in contexts dating as early as 1758 (Bingeman and Mack 1997). Back marks referencing the gilding process, however, did not appear until 1796. In that year Parliament passed an act standardizing the amount of gold used for gilding buttons at 9/16 of an ounce per gross of buttons. This act placed a premium on quality and led to a proliferation of back marks advertising the number of gilding dips and the quality of the button (Albert and Adams 1951:38; Luscomb 1967:79; Peacock 1996:15; Meredith and Meredith 2000:25-26).

While the buttons all appear to be of British origin, the coins have a more international flavor. They include a 1772 British half penny, an 1816 Montreal half penny token, and an 1820 U.S. penny (Figure 8.20). Also included in this assemblage were two different Brock Tokens commemorating Sir Isaac Brock's death at Queenstown Heights in 1812. One of the tokens is decorated with a ship and the slogan "SUCCESS TO THE COMMERCE OF UPP^{R}. & LOW^{R}. CANADA" on the obverse and the following inscription on the reverse: "SIR ISAAC / BROOK [sic]. BAR^{T}. / THE HERO OF / UPPER CANDA. / WHO FELL AT THE / GLORIOUS BATTLE OF / QUEENSTOWN HEIGH^{TS} / ON THW 13 OCT^{R}. / 1812". The second token is pierced, obscuring what may be on the obverse a lighthouse surrounded by the words "SUCCESS TO COMMERCE & PEACE TO THE WORLD". The reverse shows two angels placing a laurel on what appears to be a stylized depiction of the original Brock monument surrounded by the words "S^{R}. ISAAC BROCK THE HERO OF UP^{R}. CANADA". The Montreal half penny and U.S. penny, as well as the well-worn surface of the British half penny, and the Brock tokens, suggest that the site was inhabited after 1820.

There are at least two possible interpretations of the collection if the materials presented by Vorhees are indeed all from the same site. The inhabitant of the site may have been an American or British citizen who acquired a range of British military clothing through trade, purchase, or capture. In this case, the presence of so many different military insignia is odd but not necessarily culturally significant. Alternatively, the complete absence of U.S. military buttons could indicate that the resident was sympathetic to Britain while living on what was an American island in theory after 1796 and in practice after 1817. The presence of the Brock tokens can also be interpreted to support a pro-British perspective. On the other hand, the tokens could also have been used as coinage or could represent an interest in the wider commerce of the lake. The sentiment of "success to commerce and peace to the world" on the pierced token certainly suggests an interest in the growth of international trade on Lake Ontario. Similarly, the mixture of national currencies is suggestive of an individual using whatever currency was at hand. The coins and tokens certainly provide evidence of the flexible economy that developed during the first half of the 19th century and may be indicative of the pan-lake identity (discussed in Chapter VI) that in some instances superceded national identity.

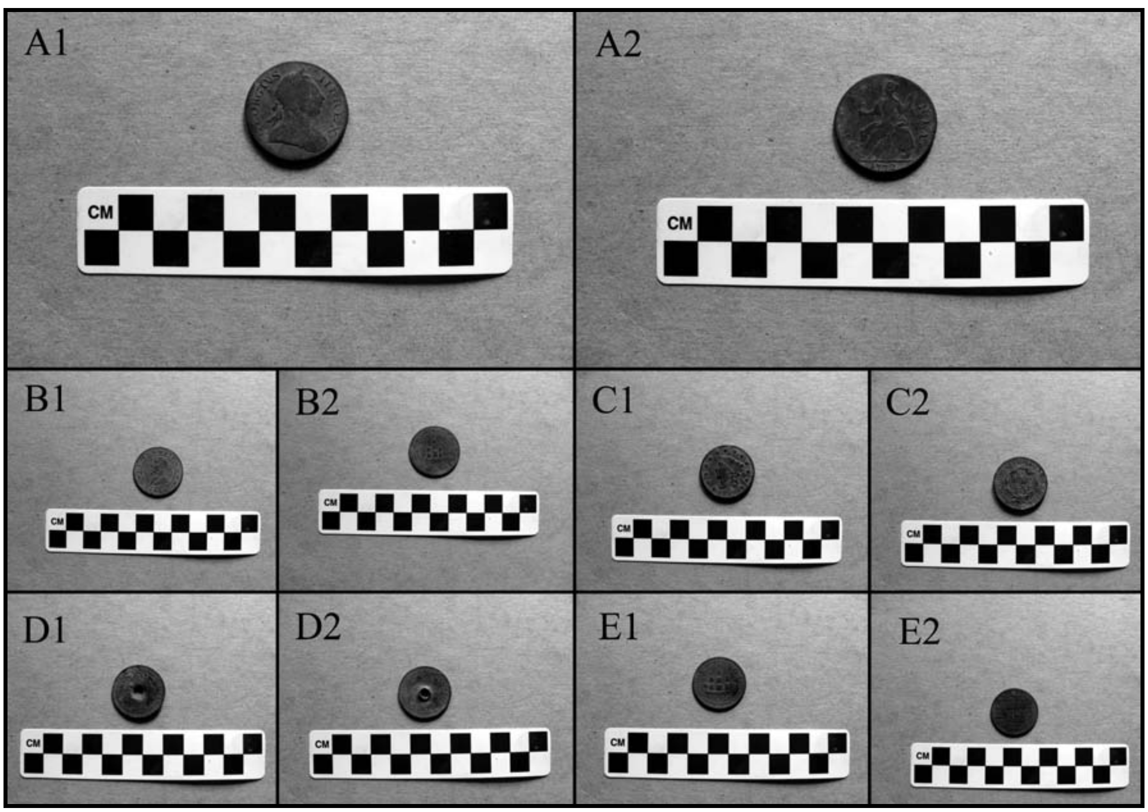

FIGURE 8.20. Coins from the Vorhees Site, Carleton Island. A: 1772 British half penny, B: 1816 Montreal half penny, C: 1820 U.S. penny, D: Brock token, E: Brock token (1: obverse, 2: reverse).

Following the decline of timbering on Carleton Island, a smaller but more stable agricultural population began to develop. By 1864 there were six farms on the island, primarily along the south shore with easy access to Cape Vincent (Stone 1864). Twenty four years later, these farms were still inhabited, although often by different owners, and a seventh farm, as well as a school that persisted well into the 20th century, had been added (Marjorie Crothers 2008, pers. comm.; Robinson 1888). An additional farm dating to this later period, likely constructed ca. 1891, was recorded within the survey area on the low ground at the head of the island (Figure 8.21). There is an 1878 reference to a farmhouse beneath the "brow of the fortification" (Anonymous 1995); this, however, likely refers to the Isadore Pluche farm, because no buildings are depicted in the proper location on the neck on either the 1864 or 1888 atlas (Stone 1864; Robinson 1888). An 1891 newspaper article discusses a worker who fell 7.6 m (25 ft.) from a scaffold to the ice while building a barn for a Folger (Anonymous 1891). The distance of the fall suggests that the barn was being built on the lowland head of the island. Henry Folger and S. B. Hance had purchased the head of the island and the western uplands not long before, and Folger purportedly ran a farm and kept sheep on the island (Durham 1889:121).

The farm structures included a large barn with a circular trough near the cliff (Figure 8.22). The barn appears to have been L-shaped, with one section supported by stone walls and piers and the other constructed of packed earth within a partial stone foundation. A second foundation, south of the barn foundation, consisted of low stone walls near the ground surface. This structure appears to have been divided into several bays and may have been a secondary barn structure. West of the large barn foundation was a long thin foundation that may have been a milking barn and the farmhouse foundation. West of these are three foundations directly on the shore. One of these was likely an ice house, and the others may be a later boathouse or dock head. The farm foundations were almost entirely of dressed stone very similar in appearance to the stone of the cliff. This farm operated into the 1920s or 1930s as a dairy farm owned by the Marsh family (Marjorie Crothers 2008, pers. comm.). The herds almost certainly grazed

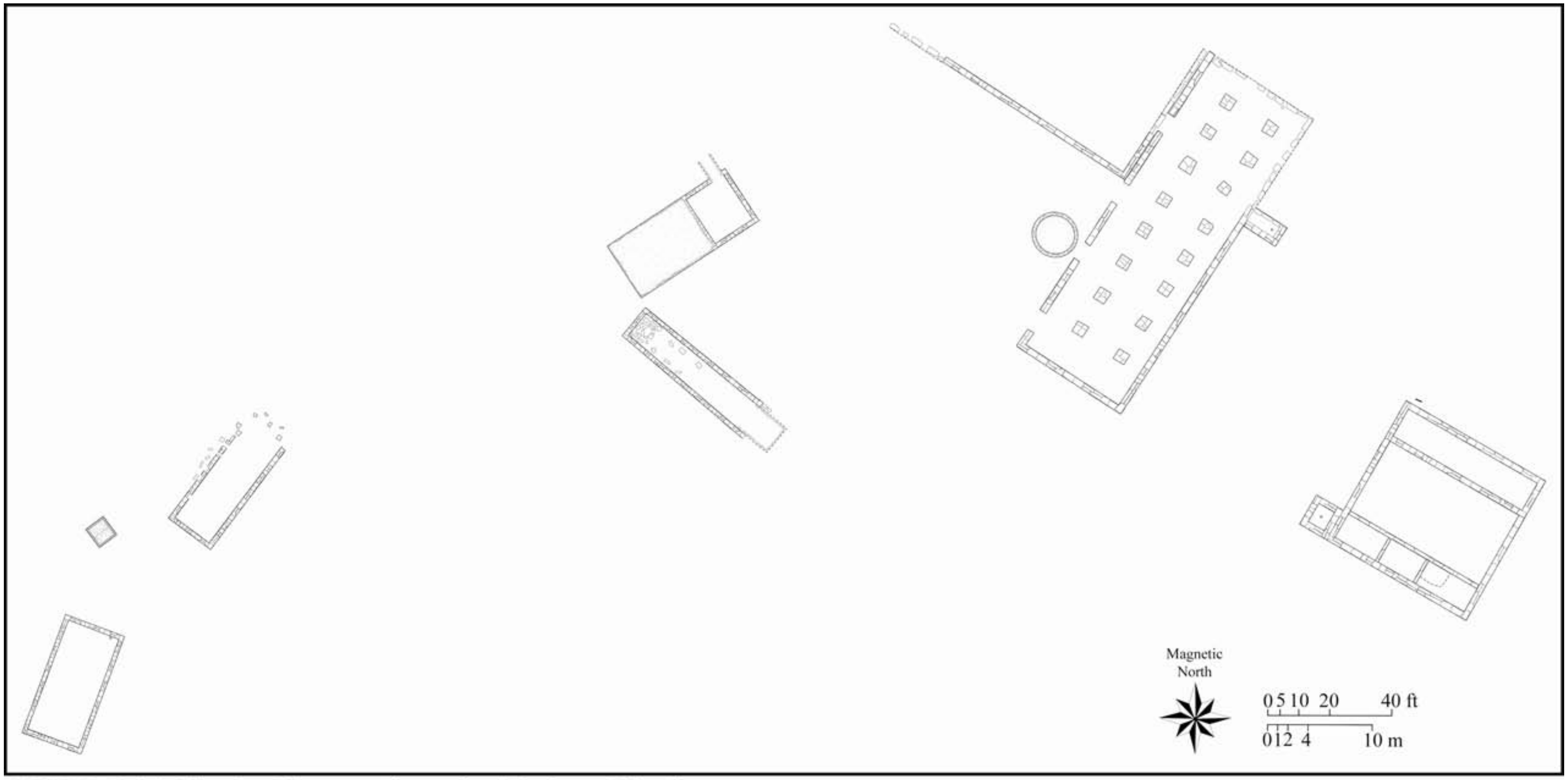

FIGURE 8.21. Sketch of farm on the neck of Carleton Island.

FIGURE 8.22. Circular trough, Carleton Island, with barn foundation in background. View towards the east.

on the uplands and were returned for milking to the barn by the road constructed by British soldiers. The lowland location of the milking barns would have benefited from the generally cooler temperatures close to the water and easy access to ice in the winter. The dairy farm is also situated on the land with the easiest access to North Bay and is the most likely location for the British shipyard and launching ways.

As the agricultural population on the island expanded, it became economically feasible to link the island to mainland New York. Carleton Island had been connected to New York and Wolfe Island intermittently throughout the 19th century, but a formal ferry dock does not seem to have been built on the island until the 1880s, when Hance and Folger purchased the head of the island (Casler 1906:150; Marr 1987; Johnson 2006:5). A ferry then ran regularly to the island through the 1920s (Charles Millar 2008, pers. comm.).

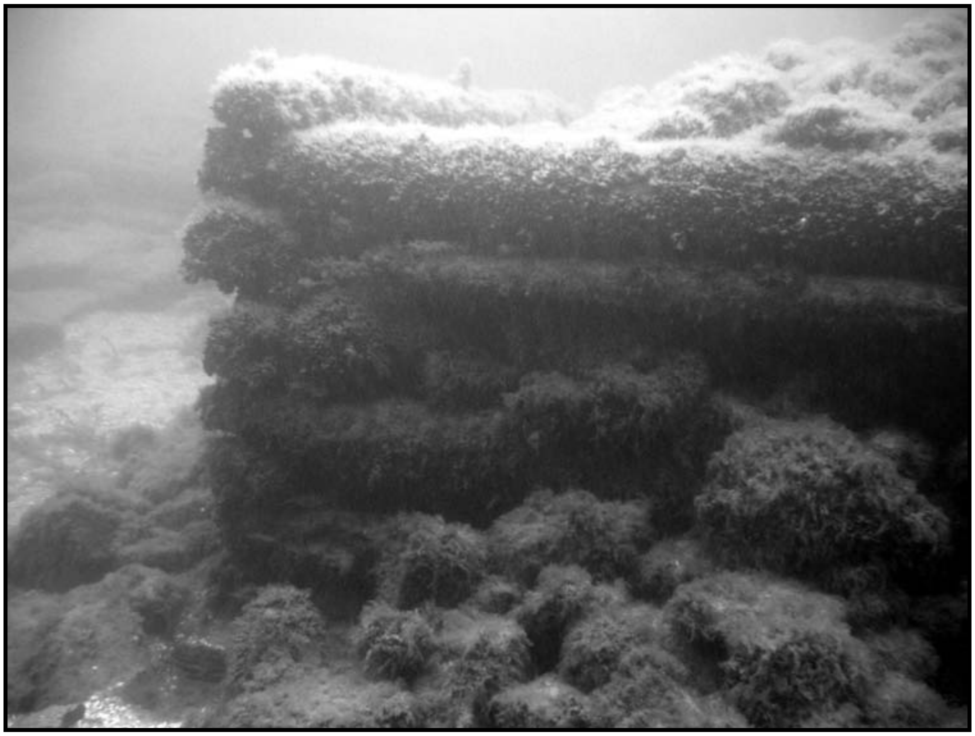

FIGURE 8.23. Representative cob-work ferry dock pier, Carleton Island. View towards the northwest.

The archaeological remains of this ferry landing closely resembled the dock indicated on an 1889 map of the island and consisted of three timber cribs and two iron mooring eyes (Marr 1987). The cribs were constructed in the cob style with the timbers stacked in an open Lincoln Logs fashion (Figure 8.23). A single drift bolt was driven through each corner, joining the headers and stringers. Cob wharfs were easier and cheaper to construct and seem to be more common in the smaller ports of eastern Lake Ontario, whereas true crib construction has been noted in major docks such as Queens Wharf in Toronto (Hernandez 2006). The western two cribs have a floor of smaller timbers near their bottoms (Figure 8.24). This floor supported the stone fill that provided the wharf with its mass and pressed it firmly to the lake floor. It was common to float the crib into place and then fill it with stone sinking it to the bottom; however, it was also possible to build the crib on the ice and then fill it with stone so that it sank in place as

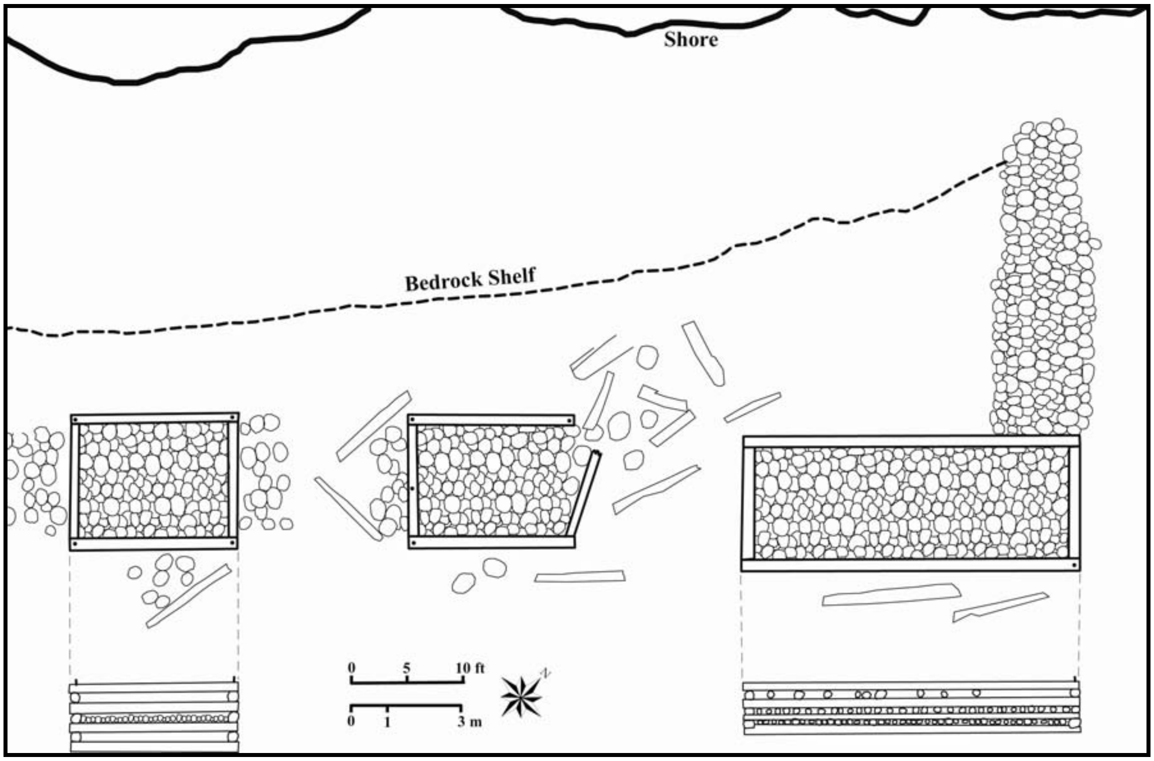

FIGURE 8.24. Ferry dock, Carleton Island.

the ice gave way (Heintzelman 1986:126; Polk 1993:130-131; Crisman 1995). The easternmost crib has a floor running parallel to every stretcher, with stone sandwiched between. This crib is also larger than and slightly out of line from the other two cribs. This change in construction may indicate that the builders erected the eastern crib first and then later enlarged the dock or that the dock was constructed by an inexperienced builder who experimented with a different technique on this crib. A rough stone causeway leads from the eastern crib toward the shore.

Harding Polk (1993:130) has described a wharf as “the bridge between a port and the ships calling upon it.” This analogy is doubly appropriate in the case of a ferry dock, with the route of the ship itself bridging two ports. In the case of Carleton Island, the timing of these bridges was tied directly to population fluctuations. A ferry ran to the island when there was a substantial fishing community and may have continued into the timbering period. It then seems to have been discontinued during the mid-19th century, only to resume late in the century. The construction of the ferry dock, as well as the founding of the island school, corresponded not only to the prime of agricultural development but also to the establishment of Carleton as an island getaway. In fact, the most pronounced change between the 1864 and 1888 atlas maps of the island was not a change in the number of farms (an increase of one), but the eight new summer homes clustered on the point. Both the school and the ferry continued to run until the Great Depression caused a decline in the summer residency of the island.

Vacation Era, ca. 1870-1929

Summer home construction on Carleton Island began relatively early in the development of the Thousand Islands as a vacation destination. The Carleton Island Club, composed of Utica, New York residents, purchased lands on at the head of the island in 1870 and again in 1873. The Navasink Club of Ithaca also purchased lands at the head but sold out to Jason Morrison prior to 1889. The Williams Brothers also bought property on the lowlands and erected cottages in 1876, as did E. M. Knight and C. M. Dennison (Durham 1889:125). These structures, as well as the Carleton Island Club buildings clustered near North Bay, likely form the bulk of the structures at the head in Robinson's (1888) map of the island and much of the building stock present there today.

The Carleton Island Club, later referred to as the "Utica Club" because of their hometown (Marjorie Crothers 2008, pers. comm.), appears to have been a driving force in the early use of the island as a getaway. One of the most comprehensive works on the island's early history, *Carleton Island in the Revolution, the Old Fort and its Builders* (Durham 1889), bears the imprint of the club and was presumably written by one of its members. The club also had a uniquely communal approach to vacationing, whereby Aubrey Head became their house and the individual structures its rooms. There was a living room house, a bedroom house, and a dining room house. The dining room house also contained the kitchen and servant's quarters and is now only a foundation (Marjorie Crothers 2008, pers. comm.). It was unclear if the dining room was the foundation with the long bulkhead entrance opening towards North Bay or the adjacent foundation with evidence of an internal cistern. Similarities in their stonework and construction nevertheless likely associate both structures with the club. The cistern suggests the need for ready water associated with a kitchen.

By the late 1880s Hance and Folger conceived of a grand scheme to subdivide their property on the uplands of the head into 700 lots and form a development called Carleton Island Park. Some of these lots sold for approximately $125 apiece but the Folgers still owned some property on the island as late as 1915, when the property was sold to pay county taxes and the plan failed (Anonymous 1890, 1915; Marr 1987). The land sales during this period did, however, attract one major new resident, William O. Wyckoff.

Marjorie Crothers, a descendant of the Williams Brothers, related that Mrs. Wyckoff was a friend of her mother, a member of the second generation of Williams on the island. After visiting Mrs. Williams on Carleton Island, Mrs. Wyckoff prompted her husband to buy property and build a summer home there. While none of the houses at the head of the island were small, they all were dwarfed by the “Villa” that Wyckoff had built beginning in 1893 (Figure 8.25). Wyckoff was a founding member of Wyckoff, Seamans and Benedict, a firm engaged in manufacturing and selling typewriters and deeply connected with the popularity and profit of Remington typewriters. As such, Wyckoff was the first of the major U.S. industrialists to invest in the conspicuous consumption of a palatial Thousand Island home (Anonymous 1893, 1895b, 1968, 1998; Malo 2004:152).

The Villa measured approximately 31.4 x 22.6 m (103 x 74 ft.), with a 33.8-m (111-ft.) tall tower, and purportedly cost $25,000 to construct, with an additional $5,000 required for its boathouses. The house had such interesting features as wooden floors laid directly into a concrete subfloor and a large water tank in the tower that fed the house by gravity. The tower also contained a lighted beacon used for navigation by lake captains. Additionally, the Villa was surrounded by several ancillary structures, including a massive retaining wall that faced South Bay, a children’s playhouse atop the

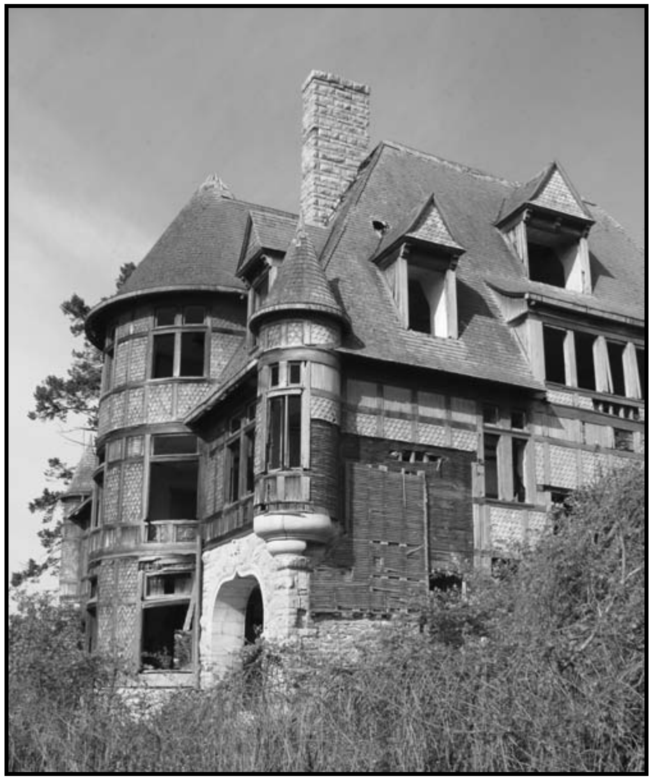

FIGURE 8.25. Carleton Villa. View towards southwest.

retaining wall, a tennis court north of the house, and a caretakers house near the center of the neck.

There was also a “model” farm behind the Villa on property also owned by Wyckoff. This was the dairy farm constructed for Folger and operated by the Marsh family in the 1920s (Marjorie Crothers 2008, pers. comm.; Charles Millar 2008, pers. comm.; Anonymous 1968). Despite its proximity to the homes on the point, this farm is not featured in period photographs of the island. It seems to have been well positioned immediately outside the sphere of the houses clustered on the point and thus, for residents and visitors alike, outside the realm of the desired perception of Carleton Island. It is also worth noting that the Villa was situated so that it presented its full grandeur to approaching visitors. The front of the building faces west towards the open lake. Although there is a set of stairs leading down to the flat rock beyond the Villa’s front yard, this area would not have been suitable for landing most boats. Instead, two other approaches were used. Visitors could come to the Villa from the ferry dock, a route that gave a long view of the entire house dominated by the tower before they either entered through the south façade or continued on to the main entrance on the west side. As an alternative, visitors also landed at the docks in South Bay and proceeded up the wide steps in the retaining wall before going through the gardens and past the tower. Like the Gouverneur marble that clad the first story, both views were designed to impress and to put the tennis courts and farm out of the direct line of sight of approaching guests.

The majority of families on the point also owned a boathouse. The Wyckoffs owned two steam launches, the approximately 60-ft. (18.6-m) long *Ezra Cornell* and the smaller *Remington*. The *Cornell* boathouse was a large structure with a rounded roof and tall windows, while the smaller *Remington* boathouse had a pagoda-style roof that covered an open second-story that was used for gatherings. Neither boathouse still stands but their foundation docks remain. The *Cornell* dock consists of a U shaped structure constructed of timber sides and a concrete deck with a rubble core. A similar construction technique was used for the south dock of the *Remington* dock. The north side, which today supports a modern plank dock, was constructed of stone-filled cob cribs. The south arms of both boathouse docks extend farther than the north, providing more shelter for vessels entering the houses and a convenient location for swimming and diving

The only standing boathouse from the Gilded Age is the rambling shingled house on the south shore of South Bay. This structure appears to have been built after the turn of the century and was the last major boathouse built on the bay. This boathouse belonged to Fred Schick, an auditor and vice president of Bethlehem Steel, who owned property on the west side of the point but docked his 30-ft (9.3-m) motor launch in South Bay. East of this structure, the partial foundation of an earlier boathouse is evident beneath a more modern current boathouse. To the west of the Schick boathouse is the submerged foundation of a large boathouse that also seems to have been owned by Schick. This foundation was constructed of timber frames nearly flush with the lake bottom and filled with rubble. The frames run parallel to the shore and perpendicular to the direction of a boat entering the house. Historic photographs show that, like the boathouse east of the Schick boathouse, this one was designed to hold smaller boats rather than motorized launches. Consequently, the orientation of the foundation would have presented no obstruction to boats hauled into the house over a platform in front. The final major boathouse on South Bay was situated at the back of the bay and has today been replaced by two smaller boathouses. This house had a full second story that was likely used as servant housing, as did the Schick and large boathouses (Marjorie Crothers 2008, pers. comm., Charles Millar 2008, pers. comm.; Malo 2007).

North Bay also contained at least one boathouse on the east side. Charles Chase owned a house on Merchants Point and kept his boat at the foot of the cliff (Marjorie Crothers 2008, pers. comm.). North Bay itself became a residence during this period, with the houseboat *Pamela*, owned by Samuel Maxwell, often moored there for the summer months. With the combination of boathouses, farm, and houses, the head of Carleton Island was a busy place; although not likely as busy as it had been during the American Revolution, it nevertheless achieved a relatively dense concentration of people, structures, and wealth within the generally agrarian northern New York landscape (Figure 8.26).

The arrival of the industrialists ties Carleton Island into the capitalist world system. The same men who were finding new ways to make money and new places to invest capital also wanted new locations for recreation, preferably in areas that were separated and “untouched” by their business developments. The Thousand Islands provided such a place. The influx of external capital to the region was not a new phenomenon. Le Ray had made substantial investments in northern New York and merchants from Montreal invested in Kingston. While earlier investment in the Thousand Islands was largely aimed at the creation of wealth, these homes were about the display of wealth. This realignment of investment was possible due to the profits of the Second Industrial Revolution which created the modern industrial economy, the expansion of transportation networks, the general lack of development in northern New

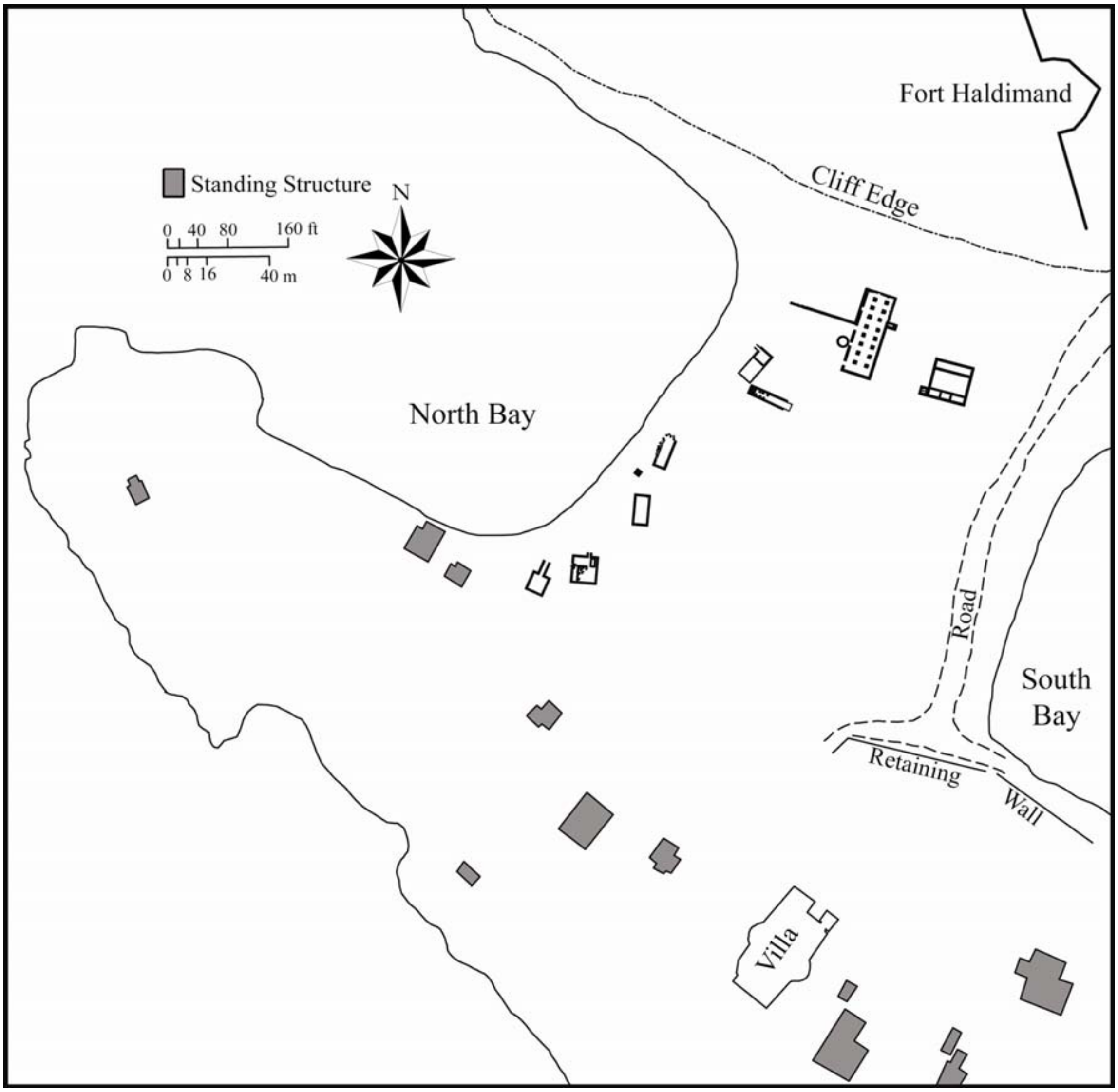

FIGURE 8.26. Historical structures superimposed on modern landscape, Carleton Island.

York, and the proximity of the area to New England urban centers. As trains made a rustic and attractive region accessible to those with sufficient funds to build and maintain a second home, the Thousand Islands became the country estates of New York and New England's elite.

The most opulent and striking, even in its currently deteriorated state, house on Carleton Island, Wyckoff's Villa, was also the most short-lived. Constructed nearly two decades after the earliest vacation homes on the head, it was vacant by the 1930s, even while many of the older houses continue to see regular use. It is emblematic of the age that spawned it, beautiful but too sumptuous to be maintained. The house also parallels Fort Haldimand. After Wyckoff's death in 1895, the house remained in his family for several years but was eventually sold to General Electric, which began to demolish the building in 1936 as part of a plan to develop the island as a company retreat, continuing the pattern begun in the Gilded Age. The prolongation of the Great Depression and U.S. preparation to enter World War II halted these plans, but not before the tower had been razed and portions of the building removed for salvage (Anonymous 1895b, 1915, 1998; Malo 2007). Windows and stained glass transoms, as well as the entire floor of a room, were taken from the house for use elsewhere, reminiscent of the buildings floated off Carleton Island after the Revolutionary War. The cost of importing materials makes construction on the island a significant financial investment, and, because most occupants seem to perceive themselves as long-term residents, structures built there are well-constructed.

As a result, owners of both the fort buildings and the Villa seemed to be unwilling to fully abandon them. Furthermore, these two derelict structures vie for prominence in the modern perception of the island, yet neither fully defines their period on the island. The fort played a largely supportive role for the shipyard and attacks into New York, while the Villa was a late arrival and early casualty of the island's built recreation heritage that stretches into the modern era.

In addition to the architectural remains, the most obvious archaeological resource from this period is the detritus spread across the floor of South Bay. Identified items included late 19th and early 20th century bottles, a copper alloy finial ball, a decorative, railing, a reel lawnmower, a drum-style washing machine, an iron box, a bed frame, and what appeared to be a boiler and winch, possibly from a boathouse. The size and location of some of these items suggests that that they were thrown from the shore or deposited from a small boat. Others, in particular the washer, were likely placed on the ice to "disappear" with the spring thaw. Trash disposal was accomplished this way in

Barrett Bay, between the General Wolfe Hotel and the ferry dock. Some residents would even place bets on when a particular item would sink (George Merry 2008, pers. comm.). This use of water for waste disposal has parallels in antiquity. The ancient Greeks, for instance, saw the sea as an appropriate place to deposit items for eternity. For them, things dumped in the sea were not supposed to return (Lindenlauf 2004). This mentality is evident throughout Lake Ontario, where trash deposited even in relatively shallow near-shore waters is perceived as "gone," removed from the cultural realm. With the exception of ships, in the historic periods, most items lost or deposited on the lake bottom were not recovered. With time and technological advancement, perception of these items has changed. There is now a commercial industry salvaging lost timber from the lake floor and a recreation industry recovering bottles dumped near early vacation sites. While historical residents largely saw the lake as a place of no return, modern residents increasingly perceive it as a place of long-term storage from which to obtain relics of the past.

Decline and Preservation

The Great Depression checked and changed the Lake Ontario tourism industry. The industry had been burgeoning for several decades and spawned its own infrastructure of buildings and steam vessels, but the economic collapse caused many of these buildings to be abandoned or destroyed, and there was a fundamental shift in the steamboat market. In some locations the tourism industry resurged immediately with the construction of many middle-class cottages. On Carleton Island the process was more delayed. Much of the head of the island remained in hands of long-standing families, but by mid-century most of the uplands of the island were owned by Merle L. Youngs. Youngs, founder of Youngs Rubber (an early maker of latex condoms), operated a cattle farm on the island consisting of 450 Herefords (Charles Millar 2008, pers. comm.; John O'Shea 2008, pers. comm.; Williams 1948). During the late 1970s, the Patten Corporation Northeast eventually acquired the uplands to develop the island for summer residential use (Marr 1987). By that time, Carleton Island was one of the few sizable but under-developed islands in the Thousand Islands. This appearance of a natural state, plus the presence of important historic resources such as the fort, prompted the Thousand Islands Land Trust to work for the donation of the fort in 1986 and acquire easements on all but the head of the island (Valentine 1997; Vogel 2008).

The island is a good example of a modern perception of landscape. Most North Americans have come to see the environment as damaged and in need of protection, but this desire to protect is often at variance with ideas of private property rights. This conflict is currently playing out on Carleton Island, where property owners are attracted to the natural beauty of the location but want the freedom to develop their land as they see fit. Not only does this landscape present a case history for the discourse between the modern preservation ethic and private property ownership, but it presents clear evidence that, like all landscapes, Carleton Island is still evolving.

Carleton Island Conclusions

Taken as a whole, the island, its maritime setting, and its multiple reuses is a tremendous example of environmental possibilism. The island sits near the head of the St. Lawrence River and commands the U.S. channel with a beautiful and strategic setting. The twin bays at the west end of the island are deep enough to shelter large craft from winds of any direction and are overlooked by a high cliff that provided an ideal site for the 18th century fortification (Hough 1854:505). The uplands were fertile and attractive first to timber-men and later to farmers and dairy-men. The island is small, however, and accessible only by water. Consequently, it was a viable settlement location only when some other factor outweighed its limited access and carrying capacity. This led to its use as strategy demanded, when the Upstate New York economy boomed prior to feeling the full impact the Erie Canal, and when industrialists sought isolation and respite from the modern world that they were creating. Finally, in the modern period, an expanded economy and personal watercraft made it accessible again, but not until after it had been recognized as a candidate for environmental and historic preservation.

Like the natural beauty of the island, Carleton's historic resources have also rubbed against the modern need to understand and, occasionally, possess the past. Ancient sites and landscapes may be transformed and reused for current aims or may be employed to recreate the past (Knapp and Ashmore 2000). For example, the history of Fort Haldimand has been used by the Land Trust to preserve both the green space and the history of the structure. Others have used the fort and the wreck of *Haldimand* to fabricate a deeper European history for the island. At the turn of the 20th century it was believed that the wreck belonged to a French war vessel (Van Cleve 1877; Anonymous 1916). It was similarly believed that Fort Haldimand was based on an earlier French fort, that treasure lay buried in subterranean caverns, that the island was connected to Millens Bay by a smuggler's tunnel running under the river channel, and that the King's Garden was developed as a flower garden by a French officer and noted botanist (Anonymous 1916). It is unclear why the public clung to the idea of a large French occupation on Carleton Island even after publication of excellent collections of historic documents proving the primarily British history of the fort and island (Durham 1889; Casler 1906).

In part, however, this recalcitrance of public perception may be tied to human perceptions of historical age. By the early 20th century the fort was badly deteriorated and overgrown, with only three barrack chimneys standing. The site looked "ancient," and in the popular mind "ancient" often needs to predate the oldest acquaintance of the oldest local resident (e.g., the grandparent of the oldest living person in the area). The American Revolution did not quite meet this criterion but the French and Indian War, being a few decades earlier, did, prompting local lore to push the believable dates for the fort and wreck backward in time. In the 1930s interest in the history of the island persisted, and a New York historical society arrangrd a social at the site (Marjorie Crothers 2008, pers. comm.). Historical research and public perception had by this time assigned the island its proper place in history, although confusion still surrounded the wreck.

In addition to an appreciation of the past, this continued interest in the history of Carleton Island manifested itself as a desire to own artifacts. The fort had long been a site for artifact hunting (Valentine 1997), but it was not until the 1973 discovery of a cannon in North Bay that serious underwater collecting began (Segelken 1976). The perception then, and to a lesser extent today, was summed up by a wreck diver in 1976 (Anonymous):

> Even though we have little [few artifacts] to show for all our work, we still had the privilege of being the first to find her because who ever heard of a scuba diver leaving an antique wooden steering wheel on a wreck?

The speaker removed the wheel shortly after finding the wreck by dragging a grapnel anchor. Such removal of items from North Bay led to amateur and professional archaeological investigations of the underwater resources around the island (Murphy 1976b, 1976a) and to current attempts to protect the site by property owners and local groups, such as the St. Lawrence River Historical Foundation. Just as with the tension between environmental preservation and ownership, the contest between private and public ownership of cultural heritage remains ongoing. The state police were called to North Bay during the 2008 survey season to remove treasure hunters who were collecting artifacts from the privately owned bottomlands (Shampine 2008).

Wilson Bay

Wilson Bay was unique among the survey areas in that divers inspected no submerged targets (Figure 8.27). Several residents and tourists reported illnesses after swimming in the bay, and the health of the archaeologists was judged to supercede academic curiosity. The side-scan sonar record showed that the bottom was almost entirely exposed bedrock littered with boulders, except the eastern margin, which was covered with sand redeposited from the artificial beach at the back of the bay. Few (approximately six) possibly cultural targets were noted in this area. The exposed bedrock of the bay floor and the boulders lining the shore suggest that the bay is regularly scoured by ice during the winter months. Conversations with local divers confirmed the absence of major submerged artifacts or sites within Wilson Bay (Jeff Culkin 2007, pers. comm.; Gary Gavurnik 2007, pers. comm.).

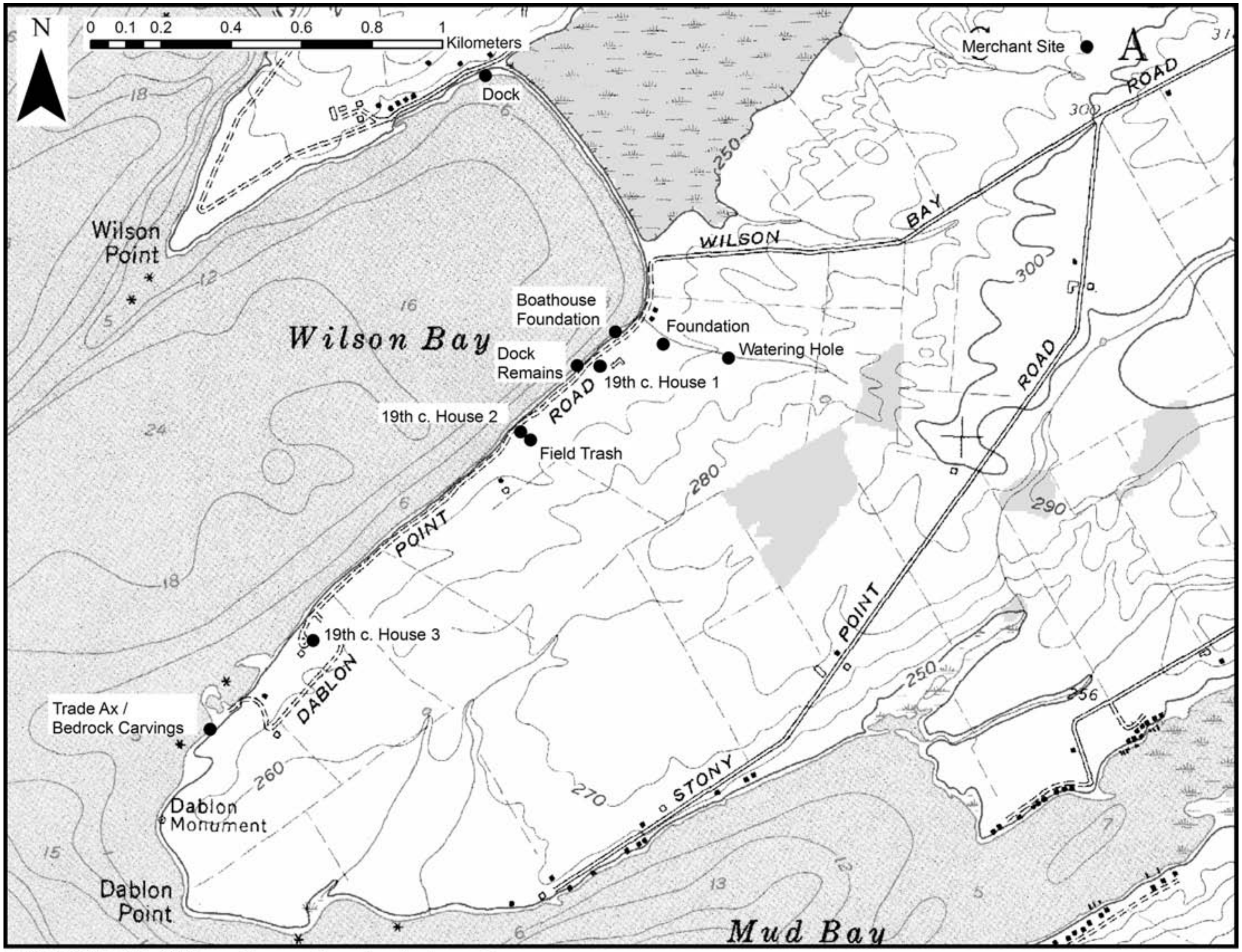

FIGURE 8.27. Wilson Bay archaeological results.

The archaeological record of the Wilson Bay shore is also poorly developed prior to the 1830s. No pre-contact artifacts were reported on either Wilsons Point or Dablon Point, although some projectile points and a metate have been found in fields northeast of the bay. In particular, the area north of where Stony Point Road intersects Merchant Road between two small streams purportedly contained many Native American artifacts (Jerry Merchant 2007, pers. comm.). Despite its association with the French priest, Dablon Point was similarly bereft of French period artifacts. A single French-style trade axe was reportedly found along the shore near the point (Figure 8.28) (Herm Hetzler 2007, pers. comm.; Garrad 1997; Heavrin 1998:103). Given the weight of this item, it was likely lost near where it was recovered.

Settlement of Dablon Point began in 1830 with the stone house (currently owned by the Karenka family) closest to the back of the bay. It was followed in 1838 by another stone house (currently owned by the Uhlig family) half way along the north shore of the

FIGURE 8.28. French-style trade axe, Wilson Bay.

point and, at approximately the same time, by what is now the Missionaries of Sacred Heart building. These three houses, some with standing outbuildings, were constructed as farms, a use attested to by the 19th century trash and abandoned farm machinery located in the surrounding fields (Alan and Kathy Karenka 2007, pers. comm,; Ruth and Robert Uhlig 2007, pers. comm.). The north shore of the bay along Wilsons Point did not develop a similar string of farms, largely due to the shallowness of the soils in that area. Soils south of the bay tend to be approximately 1.5 m thick, while those north of Wilson Bay are often only 20-25 cm thick.

FIGURE 8.29. Metal dock footings, Wilson Bay. View towards the west.

In addition to producing grains, the farms on Dablon Point raised cattle during the early 20th century. A watering hole identified inland from the eastern corner of the bay was likely associated with this use. Other farmers purportedly watered their cows by driving them to the flat-rock ledges that line the south side of the bay and allowing them to drink from the lake (Ruth and Robert Uhlig 2007, pers. comm.). It seems that the same feature that made the submerged portion of the shore archaeologically unproductive also made it a convenient watering hole. The remains of a metal dock drilled into the shore bedrock (Figure 8.29) and a boathouse foundation, both located near the back of the bay, also dated to the 20th century.

On the opposite shore of the bay there was a substantial (approximately 30 x 20 m) L-shaped dock constructed of stone-filled crib work. The dock appears to consist of two parallel crib structures that define the edges of the dock. The deck was presumably formed of wooden timbers or planks that have deteriorated or were removed. The date of construction is unknown but given its proximity (approximately 50 m) to the 19th century Wilson farmstead, it may well date to the mid-19th century.

While not as productive or diverse as other survey areas, the Wilson Bay area is indicative of the early-19th century littoral agricultural landscape of northern New York. The relatively short period of agricultural fluorescence in the region prior to settlement moving west along the Erie Canal is well represented by this area, with early substantial farmsteads that were in part preserved by the quick decline of local settlement. In particular, the southern shore of the bay retains much of its historical character, with only approximately 50% infilling with new structures. In many cases the newer buildings are separated from the historic structures by visual barriers, so that the historic landscape is generally well preserved.

Long Carrying Place

Long Carrying Place is similar to Wilson Bay in that the terrestrial archaeological findings far surpassed the underwater findings (Figure 8.30). Unlike Wilson Bay, there were no methodological gaps; all potentially cultural targets in this

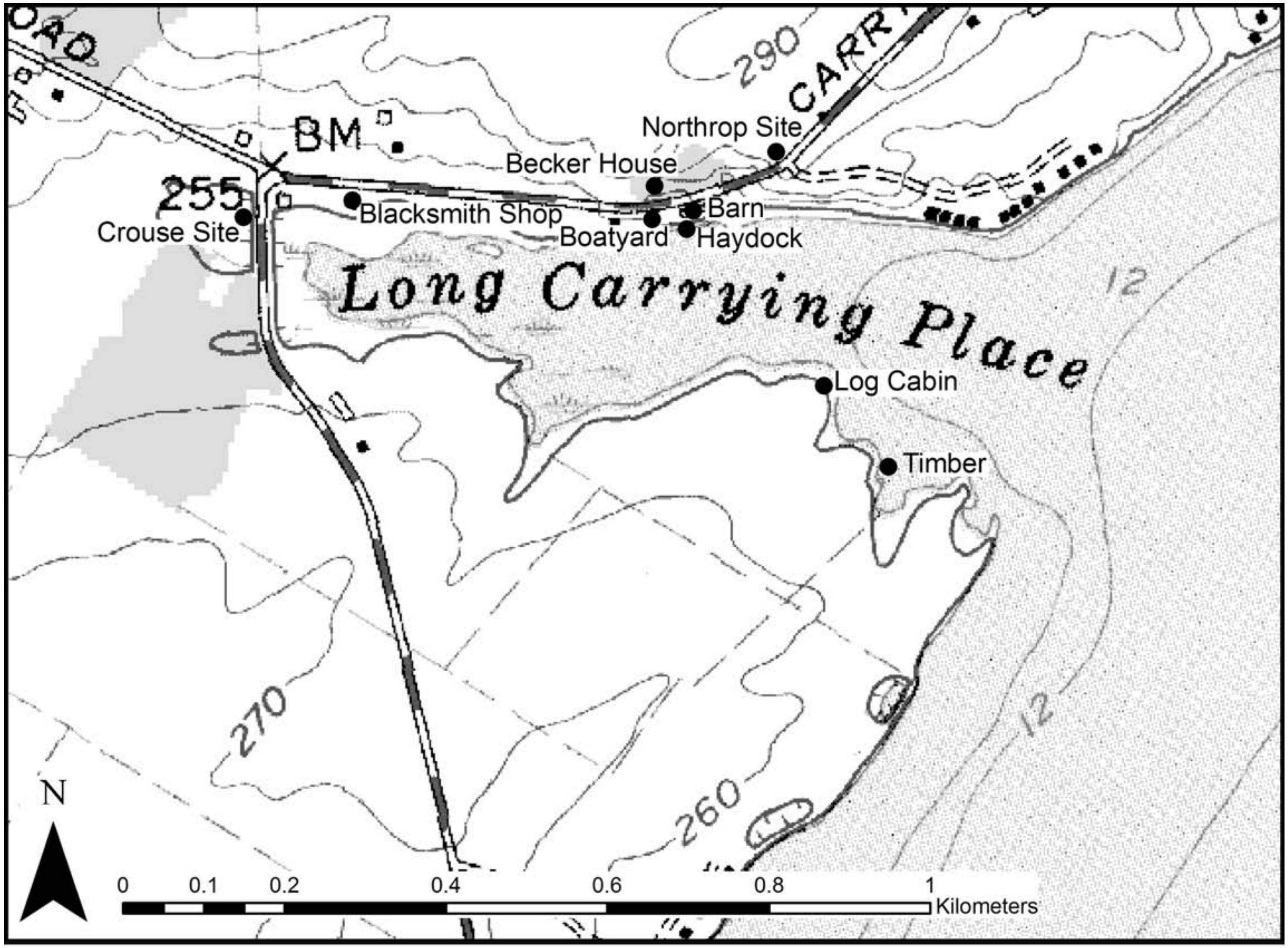

FIGURE 8.30. Long Carrying Place archaeological results.

area were inspected, and “potentially cultural target” was broadly defined. The scarcity of underwater findings was particularly striking given the length (pre-contact to present) and intensity (extensive cottage construction beginning in the 1930s) of occupation in the area. Conversations with local divers confirmed the paucity of artifacts and sites in and around Long Carrying Place (Ray Kimball 2007, pers. comm.; David Watson 2007, pers. comm.). Despite the dearth of submerged resources, terrestrial findings provide the basis for some discussion of the shore landscape.

Native Americans and the Portage Route

There are two identified pre-contact sites on the shores of Long Carrying Place. The Northrop Site, situated near the crest of the hill north of Long Carrying Place, was a Point Peninsula (Middle Woodland) group burial. While extending the country road (Point Peninsula Road/County Route 57) through their property during the early 20th century, Benjamin and Oscar Northrop uncovered a stone-lined burial pit. The pit measured approximately 2.4 m long, 1.8 m wide, and 1.2 m deep, and was capped with large slabs of stone. The grave contained between 8 and 17 individuals, some of whom had evidence of head trauma that likely caused their deaths. Unfortunately, by the time the collected artifacts were inspected by an archaeologist in the 1930s, much of the collection, originally large enough to fill a large milk pan, had been lost (Kirk Aubertine 2007, pers. comm.; Becker 2007, pers. comm.; Cook 1930d, 1930e; Ritchie 1944:73; Lance 1987:14-15). West of the Northrop Site, the Crouse family collected a substantial number of artifacts from their property near the back of the bay. Unfortunately, this collection has also been dispersed and lost (Allen Crouse 2007, pers. comm.). Interviews with other property owners, however, suggest that the artifacts were most densely concentrated at the back of the bay, with densities (measured in numbers of projectile points collected) dropping off quickly to the south and east (Allen Crouse 2007, pers. comm.; Murray 2007, pers. comm.; Norman Otis 2007, pers. comm.; Daniel Villa 2007, pers. comm.). North of Long Carrying Place, the Beckers reported finding projectile points in an area stretching from the Northrop Site to the area where the Crouse collection was found. This continuity of materials might suggest that the Northrop Site and Crouse collection were connected, forming different foci of the same site, or that the area was inhabited by several groups over an extended period. Without access to the collected materials, it is impossible to determine if they were contemporaneous.

The Northrop Site and Crouse collection are an interesting parallel to the Point Peninsula type-site (NYSOPRHP site numbers 7036, 7419, and 7420) and the Garney Barr collection near Long Point State Park. Like the Northrop Site, the Point Peninsula Site was defined based on burials excavated early in the 1900s (Ritchie 1944:166-173). Garney Barr, who farmed the adjacent lands for much of the 20th century, has amassed a sizeable collection of artifacts that span the Archaic to modern periods and indicate a wide range of activities at the site. Both Long Point and Long Carrying Place contain Point Peninsula burials associated with habitation sites, but most striking are their geographic settings. Both are defined by long thin bays opening into Chaumont Bay (Figure 8.31). The association between sites associated with the Point Peninsula culture and these long bays was first voiced by Dr. Timothy Abel, who has found Point Peninsula ceramics at the Storrs Harbor Site, which also borders a thin bay (discussed below). Near the Storrs Harbor Site is the Catfish Point Site (NYSOPRHP site number 1521), which contained projectile points dating from the Archaic through late prehistoric periods. The reason for the apparent preference of Middle Woodland people for these bays is unknown but may have been based on subsistence. Both the Garney Barr and Catfish Point collections contain net sinkers. It is possible that the narrow bays allowed a net to be stretched across the mouth and pulled up the bay, essentially turning the bay into a fishtrap (Timothy Abel 2007, pers. comm.). The presence of earlier artifacts at both Point Peninsula and Catfish Point (and potentially Long Carrying Place) suggests that this may not have been a Middle Woodland innovation. It is notable, however, that the Point Peninsula people chose to bury their dead so close to these bays. While the Point Peninsula interment methods may simply lend themselves to better preservation and archaeological visibility (e.g., stone-lined crypts), the proximity of burials suggests

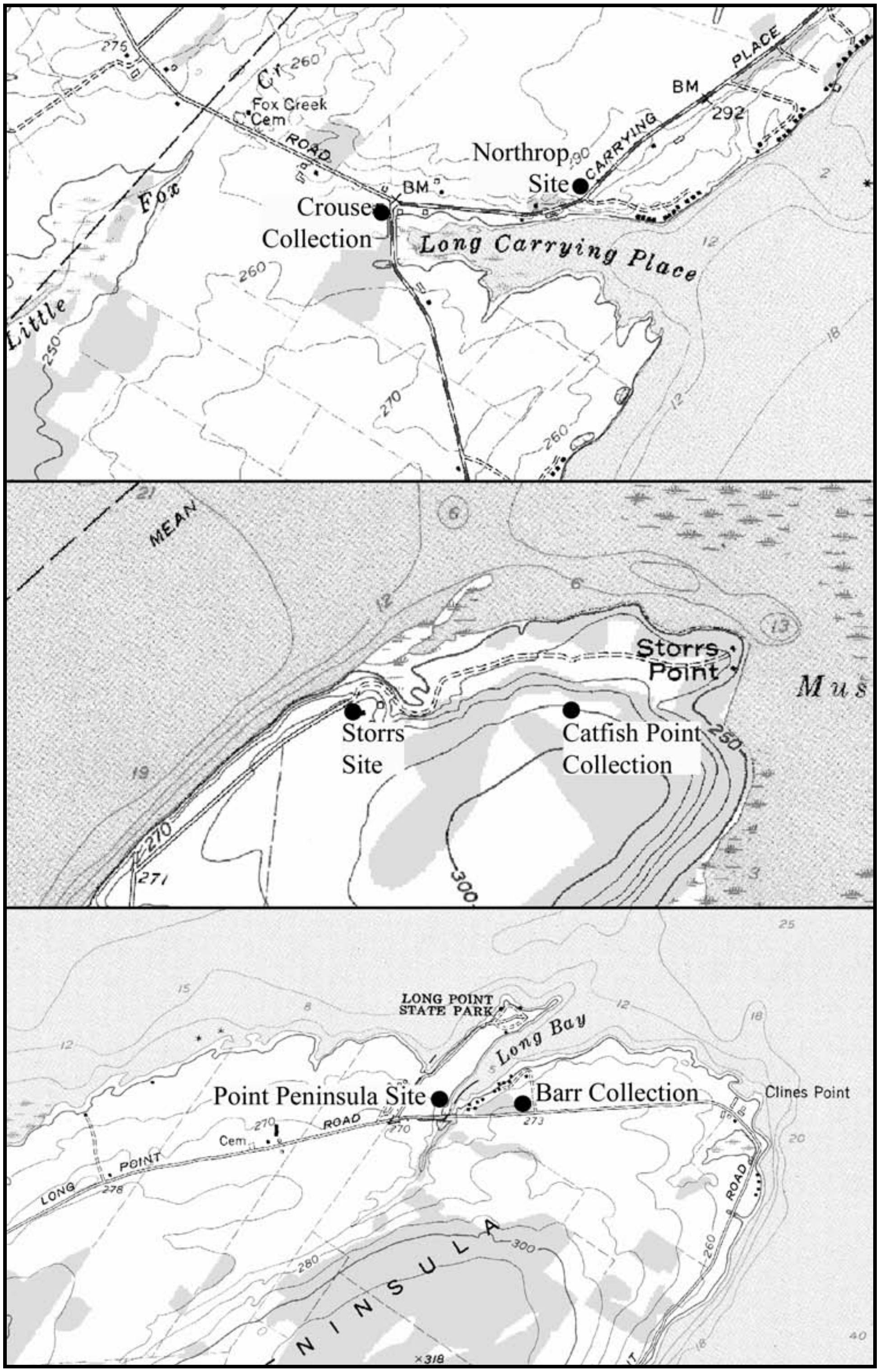

FIGURE 8.31. Association between long thin bays and Point Peninsula sites.

an increased ceremonial importance to these sites, placing the dead in near locations important to the living.

In addition to the potential for seining fish within Long Carrying Place, the bay was also important as the terminus on a portage route, which led to the name of the bay. From the back of Long Carrying Place it is approximately 1.2 km to a stream that empties into a sheltered cove within Fox Creek Bay. This route was used during the contact period (Jerry Merchant 2007, pers. comm.; Cook 1930d, 1932a; Lance 1987), and the distribution of artifacts within and around the Crouse collection suggests earlier groups may have followed a similar path. One difficulty with accepting Long Carrying Place as part of a portage route is presence of a much narrower (approximately 75 m) portion of the isthmus, known as the “Carrying Place,” just to the south. Both routes permitted paddlers to travel through the more protected waters of the Black River Bay and Chaumont Bay, avoiding the open lake, but the Long Carrying Place option extended this protection slightly farther along the route. Crossing at Long Carrying Place placed the paddlers in the lee of Fox and Grenadier islands while a portage at the Carrying Place required 3.5 km of travel in the open lake before reaching these protected waters. The added difficulty of portaging a longer distance may have been counterbalanced by the safety provided by a longer journey in sheltered water. It is also noteworthy that the portage across Wolfe Island was approximately 2.9 km (Anonymous 1815), although a much shorter overland route (850 m) was available 6.6 km to the east. This shorter portage may have also been used but clearly not to the exclusion of the longer. In considering portage decisions, it may be necessary to reconsider how Native Americans perceived distances over water versus distances over land. It is also unnecessary to assume that only one or the other portage routes across Point Peninsula was used. Paddlers could have decided which route was best based the direction and velocity of the winds on a given day. The habitation site that likely formed the Crouse collection may have also been a reason to portage at Long Carrying Place. It is unclear if the portage caused short term settlement (camps) near the bay or if a more permanent settlement at this location was an additional factor for choosing to portage at Long Carrying Place.

Also possibly associated with the portage are the purported remains of a log cabin situated on the south side of the bay near the mouth. The cabin site was independently reported by the property owner and other residents, but what remained of the structure was burned during the 1990s and no artifacts were visible on the surface (Daniel Lashway 2007, pers. comm.; Norman Otis 2007, pers. comm.). The reported location of the site was on a point controlling access to the portage and had easy access to the water. It was also a substantial distance from the historic road, suggesting that it was intended to be approached by water rather than land. If the site was associated with the portage, it likely dates to the early British occupation of the lake; however, the cabin is just as likely a later fishing shack, similar to those found on the south shore of Wolfe Island (Daechsel 1989:10-14).

The position of the cabin, the presence of the portage, and the route followed by the road around Long Carrying Place raise an interesting point about the role of inlets and portages in transportation (Westerdahl 2006:77-78). Long Carrying Place represents a disruption of both terrestrial and maritime transportation networks by the insertion of a narrow strip of contrary environment into the regular means of travel. A portage requires a boat to be carried overland to connect two bodies of water. The same inlets and associated channels that benefit a portage by extending the water inland interrupt to the progress of roads. At Long Carrying Place the road is forced to swing in a circuitous arc around the bay, requiring additional travel time. In other locations, such as Parrotts Bay, the energy spent in small detours was saved by the major outlay of energy and materials necessary to build a bridge over the offending inlet.

Development of Long Carrying Place during the 19th Century

The road around Long Carrying Place was constructed in 1818, opening the isthmus to settlement (Lance 1987:65). In a broader context, all of the shores of Chaumont Bay were regionally popular settlement locations during early 19th century, with several families in the area by 1812 (Hough 1854:202; Cook 1931). The Chaumont Village area on the east side of Chaumont Bay expanded quickly with stone quarrying, a rail depot, and a substantial shipbuilding industry by mid-century. In fact, the Chaumont-based Copely limestone and shipbuilding enterprise produced the 309-ton *Watertown* for service in the Wolfe Island Canal (Smock 1890:247-248; Cook 1929b). Across the bay, however, the Point Peninsula region remained distinctly rural with several farms strung along the single road to the point.

Settlement on Point Peninsula began ca. 1810 with an influx of families from the Mohawk Valley and, after a preliminary timber harvesting phase, was primarily agricultural (Cook 1930a; Lance 1987:9). The area immediately surrounding Long Carrying Place seems to have been settled during the late 1830s (Stone 1864; Lance 1987:11-12). Several of these farms are still standing, and, although of a vintage similar to those around Wilson Bay, they are of a different character, possibly because the builders emigrated from different regions. In addition to the farmsteads, a blacksmith shop, cooperage, boatyard, and haydock were situated along the north shore of Long Carrying Place creating a node of rural industry.

The blacksmith shop was likely erected by Abner Rodgers ca. 1840, although there is a possibility that George Crouse built it ca. 1855 (Lance 1987:6,11). Rodgers, who moved to the area from Massachusetts, was described as "a first rate blacksmith" by John Bedford (1998:121). Rogers eventually sold his business to William Brockham (Brougham), who appears in Stone's atlas (1864). Later descriptions of the blacksmith shop and its alterations make it likely that it is the structure still standing near the head of the bay (Figure 8.32) (Robinson 1888; Lance 1987:11). Immediately east of the blacksmith shop was the smith's house and another home, neither of which remained.

Standing slightly farther east was the Becker House, at the foot of the hill leading to Long Carrying Place. Built in the mid-19th century, the house was inhabited by Fred Bartells (Bortals) beginning in the 1860s and later by the Northrops (Stone 1864; Robinson 1888). Bartells was a cooper and operated a shop, which was demolished in

FIGURE 8.32. Blacksmith shop, Long Carrying Place. View towards the southeast.

1953, next to his home (Lance 1987:12). He also owned a haydock, the remains of which are extant.

Point Peninsula was a major hay and barley producing region, and rather than cart their produce along the road to market, farmers aggregated it at haydocks where it could be loaded into scows and schooners for export to a regional shipping center such as Sackets Harbor, Cape Vincent, or Oswego (Van 1929). The principal haydocks on Point Peninsula were at the village of Point Peninsula and Harris Point, both on the east side of the peninsula itself, while the dock at Long Carrying Place (Figure 8.33) likely served the smaller population strung along the isthmus (Van 1929; Lance 1987:26-27,67; Bedford 1998:89). The haydock at Long Carrying Place took advantage of the sheltered water of the bay, which is surprisingly deep (approximately 4 m) for its width. The dock was constructed of rubble, likely capped with boards, and served primarily as a causeway to reach vessels rather than as a mooring location. Scows collecting hay were purportedly tied to trees on the shore and kept in deep water with poles braced against the shore. This practice continued until ca. 1915; use of the other Point Peninsula haydocks ended in 1929 (Lance 1987:27).

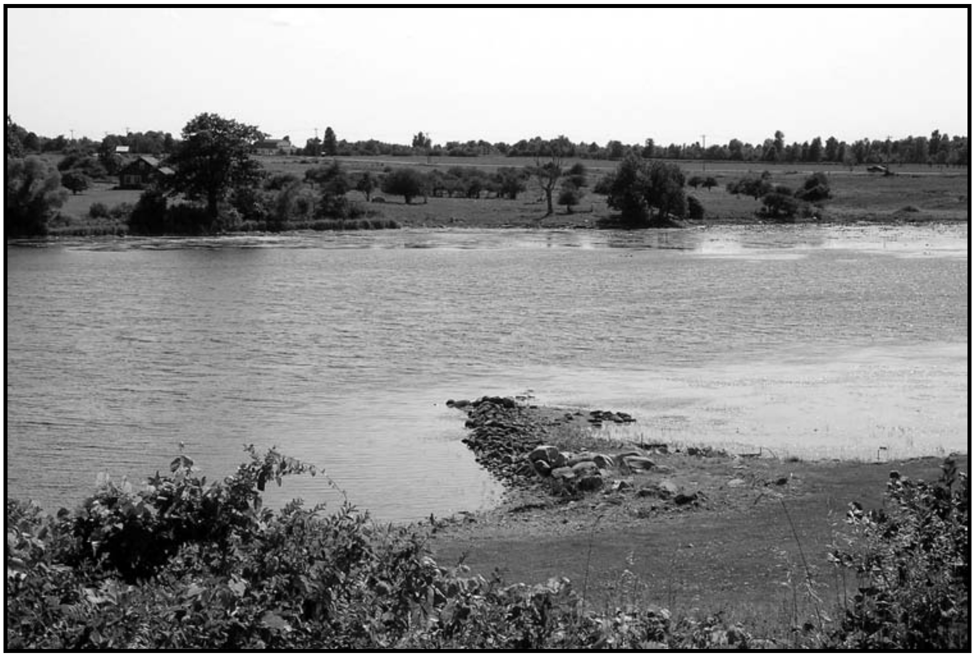

FIGURE 8.33. Haydock, Long Carrying Place. View towards the west.

The archaeological remains of the Long Carrying Place haydock consisted of a spit of stones, a barn foundation, and the graded path connecting the road and the dock. The barn foundation was immediately east of the path as it sweeps down from the road with a switchback to reduce the grade for carts traveling down the slope. A carved stone salvaged from the foundation indicates that barn was built in 1885. Presumably it was used to store grain prior to being loaded onto the scows (Becker 2007, pers. comm.).

Likely taking advantage of his proximity to the haydock and his knowledge of watertight structures, Bartells also operated a boatyard on his property, where he built many of the scows used in the grain trade, in addition to several fishing boats (Lance 1987:12). The exact location of the boatyard is unknown but there is an artificially graded area with an appropriate slope immediately west of the haydock.

The majority of the vessels built by Bartells were likely scow schooners because they were less expensive and less complicated to build and were more likely to be within the repertoire of an untrained boatbuilder. Scow schooners were introduced to Lake Ontario following the War of 1812 and flourished until the 1890s, peaking in both numbers and tonnage during the 1850s. Because of their shallow draft, lack of a keel, and schooner rig, these vessels were ideal for shallow and slightly improved harbors and for utilizing small docks where larger schooners and steamers could not approach. Consequently, they were often used in itinerant trades, such as shuttling bulk materials between small ports or connecting particular industries (e.g., transporting tanbark from lumber yards to tanneries) (Inches and Partlow 1964:290-292; Pott 2001:132-133,135). While the shapes of schooner scow hulls, particularly in bow form, varied widely, nearly all scows had straight sides, hard chines, and flat bottoms, leading to very shallow drafts and giving them poor seakeeping ability. This necessitated the almost universal inclusion of a centerboard (Inches and Partlow 1964:290; Pott 2001:30-31,138-140). One author described the resulting hull shape in this way:

> Deck over an outsized cement mason’s mud box, add a jib-boom, a couple of masts, rudder and deckhouse, and the result would be close to the appearance of the average schooner-scow. (Inches and Partlow 1964:289-290)

Most scows also tended to be built with drift bolts driven edgewise through relatively thick side planking (approximately 10 cm thick), with few if any frames. This technique, known as “gunnel building,” relied on the drift bolts for structural strength (Inches and Partlow 1964:290; Pott 2001:30). In general, these vessels were 16-25 m long, capable of carrying 1,000 bales of hay stacked high on the deck, and could be worked by 2-3 men (Cook 1930a; Inches and Partlow 1964:291).

The other product of Bartells’ boatyard, fishing boats, contributed to a major secondary source of income for many farmers on the shores of Chaumont Bay. The inhabitants of Point Peninsula had a strong tradition of alternating farming and sailing, transitioning to sailing after the planting season and returning in time for harvest (Lance 1987:19,21; Bedford 1998:151). Many of those who did not sail were involved in seining for lake herring (*Coregonus artedii*), commonly called “cisco.” Chaumont Bay was a major cisco spawning ground. Here the fish were so plentiful during the first three to four weeks of November that they were often called “Chaumont currency” (Hough

1854:206; Pound 1945:239; Van Doren 2006). A less productive season took place in April (Bedford 1998:167,204). Some cisco were sold or traded to local farmers as fertilizer, but the majority were dressed, salted, barreled, and exported for consumption. Chaumont Bay yielded 10,000 to 20,000 90.7 kg (200 pound) barrels annually between 1816 and 1855, with a mid-century price of $0.25 per barrel (although the price fluctuated significantly). The economic impact and the effects on the cisco population (a typical cisco weighs 0.17-0.91 kg) were pronounced (Anonymous 1897a; Cook 1930b, 1931; Lance 1987:9; Van Doren 2006). The cisco industry in Chaumont Bay ended during the 1870s when the fish simply ceased to appear. While over-fishing may have been a factor, the abrupt stop in use of the bay for spawning suggests that it no longer met the needs of the cisco. An increased amount of sediment washing into the bay, the result of agriculture-induced erosion, likely destroyed the feeding and spawning beds that the fish depended on (Thomas 1978:51; Van Doren 2006).

Cisco were caught almost exclusively by shore-based seine fishing. Consequently, the industry was controlled primarily by farmers who owned littoral property (and presumably the seine nets and shore shanties for dressing the fish). Farmers contracted the assistance of their neighbors in exchange for a percentage of the catch (Thomas 1978:51; Bedford 1998:167,204). The fishing method involved attaching one end of the seine net to a shore capstan and loading the remainder of the net into a boat. The boat was then rowed in a broad arc before returning to shore, where the other end of the net was attached to the capstan. The nets were 377 m (75 rods) long and 9 m (30 ft.) deep, with weights on the bottom and floats on top. The mesh was large enough to allow small fish to pass through. Once attached to the capstan, the net was pulled in and the catch gathered (Hough 1854:206; Bedford 1998:167-168,204).

Trap nets were also used in Chaumont Bay to catch bullhead, pike, and eels. These nets employed a leader net to direct fish from shallow areas through the fluke and into main net (the “car”) (Lance 1987:57). The crib and stone caissons between Point Salubrious and Three Mile Point may have been used to set the leader nets, although local tradition holds that they were used for cisco fishing (Richard Guga 2007, pers. comm.; Ray Kimball 2007, pers. comm.).

Taken together, the boatyard, smithy, and cooperage formed a small cluster of industrial activities around the transportation node of the haydock. This cluster fulfilled many of the needs of the farmers strung along the peninsula between the towns of Three Mile Bay and Point Peninsula and formed one of the primary links between the terrestrial agrarian system and the maritime transportation system. Long Carrying Place and the facilities situated on its shore formed an anchor or focus in the local community, likely defining the regular interaction spheres of the local residents who opted to travel there rather than to the other larger bounding villages. The formation of this hamlet is also interesting because it appears to be organic rather than planned or driven by a particular interest. The blacksmith shop was founded first, followed by the cooperage, and then the haydock and boatyard. Each of these institutions was the product of an individual decision, likely the reaction to a local need or perceived avenue for profit, largely on the part of Bartells. Without the actions of this individual, the character of Long Carrying Place would have been very different.

It is also worth noting the coincidence of two different forms of transportation, historic dock and prehistoric portage, in this small bay. Native Americans and European Americans may have selected this spot for different reasons, but both benefited from the protection offered by the bay (although, sheltered water may have been less of a concern for boats that were to be portaged with their paddlers). The visibility of the spot could also have been a consideration. The deep cut of the narrow bay, with its high bluff to the north, is easily identified from the water and could have made it a convenient location to stage a portage because it allowed each trek to begin or end from the same location, thus reducing the chances of wandering off track. The well-defined location essentially allowed a paddler to put a pin in his or her mental map, defining where they were in the landscape. The other side of the portage is also well defined, with Grenadier Island and Fox Island pointing to a well-defined spit lying immediately (0.5 km) north of the desired stream. Van der Noort and O’Sullivan (2006:50) have argued that paths transform the wilderness into a cultured landscape by eliminating some of the unknowns. This is particularly true of portage routes because the intersection between water and land provides for a multitude of landmarks that better define a route. A known and well-defined portage route extends the landscape from water to land and back to water, linking disparate locations that cannot be seen at one time. Similarly, although the haydock is nearly impossible to see from the water, its geographic setting would have permitted boatmen to easily navigate to it, increasing the efficiency of the dock. This coincidence of uses hints at a scenario in which, despite different cultural contexts, a landscape retains similar meanings to different groups.

Fabricated Histories

Christer Westerdahl (2006:61) has posited that transit points, including portages, are often the foci of myths, and Knapp and Ashmore (2000:19) have argued that ancient landscapes are ripe for the re-creation of history. Both of these positions are supported by the misconstrued and fabricated histories that surround Long Carrying Place. In some cases these fabrications resulted from the repetition and expansion of incorrect information. For example, Joyce Lance (1987:13-14) described a fort dating from the period of the French and Indian War at Long Carrying Place, known as Fort Bull, providing details of its location, purpose (to guard the Mohawk River to Woods Creek region), and a 1756 attack that took place there. There was, however, never a fort at Long Carrying Place. The attack and purpose did correspond to a Fort Bull situated near the east end of Lake Oneida, where it guarded the carrying place to the Mohawk River (Coughlin 1905:282). This story was adopted by a local property owner who offered purported physical evidence of the fort in the form of a U.S. 1850 model foot officer's sword (Figure 8.34). The identification of the sword, provided by the owner, was later substantiated, although it could instead be a nearly identical 1850 model mounted officer's sword (Russell 2008). The discrepancy between the date of the sword and the date of Fort Bull is telling, as is the condition of the sword. The informant claimed that he found it protruding from the ground, hilt up, in a field to the north of Long Carrying

FIGURE 8.34. U.S. 1850 model foot officers sword, Long Carrying Place.

Place. The condition of the weapon, however, is not consistent with a sword left exposed to the elements, nor is there a difference in the corrosion of the blade that would suggest where it met the soil. There is no reason to believe that the informant maliciously intended to mislead the survey crew, but the use of an anachronistic weapon to support an erroneous historical claim is an interesting example of making false history appear true through physical evidence.

The same informant also provided a different example of fabricated history, demonstrating the possible culpability of archaeologists in the misinterpretation of the past. He described the Northrop Site as containing "jade" jewelry, a statement that, for the archaeologist, conjures images of Mesoamerican burials. Rather than intentionally misleading the interviewer, the informant was likely conflating one rock type (chert or flint) with another (jade). Both are discussed regularly in archaeological contexts and transposition in his oral history is not surprising. A storyteller without an archaeological background might not appreciate the difference between two equally exotic-sounding rocks

The informant discussed above held some sway in the immediate community, and variations of his myths were repeated by neighbors. The most often reported and widely ranging myth centered on the presence of gold in or around Long Carrying Place. Most of these stories seem to have their root in the destruction of General Wilkinson's flotilla on the night of 26-27 October 1813. Wilkinson's contingent consisted of approximately 5,000 men in open boats who were surprised by a violent storm and scattered along the shore from Sackets Harbor to Kingston. Some of the boats were blown into Chaumont Bay during the night and had some difficulty navigating out (Hough 1854:502-504; Cook 1930e). From this sad but uncomplicated story, a mythology has developed that spans from the French and Indian War to the War of 1812. Ships large and small have been variously chased into Chaumont Bay or blown over the isthmus in bad storms, and, finding themselves trapped, have either buried chests of gold and possessions around Long Carrying Place or placed their gold in a cannon and submerged it in the bay. In one version of the story, the French then portaged their vessels from Long Carrying Place using logs as rollers (Cook 1930d, 1932a; Lance 1987:16-18). Enough credence was given to these stories that a metal detector survey was conducted around Long Carrying Place in the 1970s or 1980s (Allen Crouse 2007, pers. comm.). Similar stories are attached to other locations around Lake Ontario, including Rogers Marsh near Oshawa, the foot of Wolfe Island, and caves on Carleton Island (Gordon McRae 2008, pers. comm.; John O'Shea 2008, pers. comm.; Anonymous 1916; Anonymous 1937). Underlying all of these is the assumption that the lake holds treasure. Like the belief that trash deposited in the lake is no longer harmful, this belief in treasure is rooted in the relative inaccessibility of the underwater environment and the invisibility of items in even relatively shallow water. In both cases the physical environment of the lake directly influences how people perceive and interact with the water. The specific locations believed to hold treasure seem to be linked loosely to historical events (e.g., Wilkinson’s fleet), inaccessibility (e.g., the swampy conditions of Long Carrying Place or Rogers Marsh), and in some instances the strength of the storyteller’s personality. Each instance is unique, but the notion of the presence of treasure is an almost universal part of the regional oral history.

Sherwins Bay

While there are several archaeological sites on Pillar Point, both professionally recorded and collected by amateurs, no Native American artifacts were identified in the vicinity of Sherwins Bay. In fact, Sherwins Bay resembled Wilson Bay in terms of physical setting (bedrock bottom, southwest orientation, artificially dammed back bay

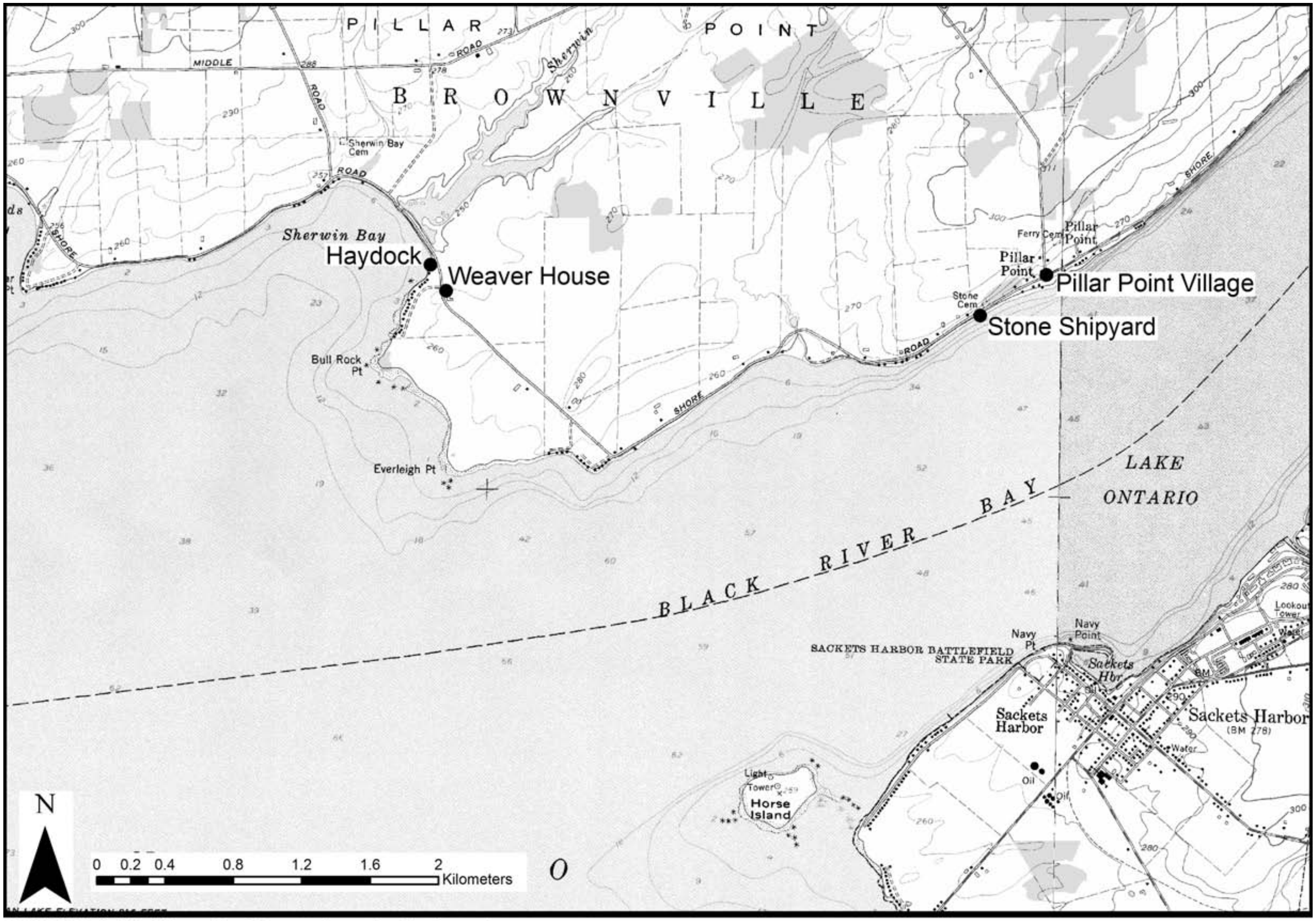

FIGURE 8.35. Sherwins Bay archaeological results.

area) and paucity of archaeological remains (Figure 8.35). The only significant archaeological finding within the bay was the remains of a stone dock that was likely used as a haydock and purportedly as a rum running dock (Figure 8.36).

The dock extends approximately 12 m from the shore and is approached by an artificial depression in the shore that decreases the slope from the bank to the dock. This dock closely resembles the haydock at Long Carrying Place and may have been used to load locally produced wheat, oats, barley, hay, or cheese onto scows for shipment. Pillar Point produce was also transported overland and by ice roads to local train depots and by ferry to Sackets Harbor (Lee 1989:30). The Sherwins Bay dock was not likely a major commercial force, but it did solve the problem of landing round-hulled vessels on the flat rock of the bay's shores. The same geologic feature that allows winter ice to scrape the bay clean each season, removing not only archaeological features but modern artifacts such as mooring blocks and occasionally docks, made it difficult for historic vessels to approach the shores. Most ship crews entering Sherwins Bay were forced to anchor near the center of the bay and row to shore in a small boat (Lee 1989:18). The stone dock was an early attempt to rectify this problem by extending a causeway into deeper water.

FIGURE 8.36. Haydock, Sherwins Bay. View towards the west.

The dock may have also been used for rum running during Prohibition. Pillar Point generally and Sherwins Bay specifically were purportedly used to land illegal alcohol (Ray Kimball 2007, pers. comm.; Lee 1989:18). The documentary evidence for this use is thin, and the oral history argument is generally based on the sparse population of Pillar Point and the fact that Sherwins Bay was the last sheltered bay before passing the Coast Guard station at Sackets Harbor. Ray Kimball also reported a rum runner sunk in deep water off of Bull Rock Point. The vessel was supposedly scuttled on purpose to evade capture but sank too deep to be retrieved. Kimball has also recovered cases of alcohol jettisoned from rum runners while being pursued through the area. The contents of the bottles were still drinkable.

Rum running was a recurring theme among several informants in the Sherwins Bay, Parrotts Bay, and Wolfe Island survey areas. As with most illicit trade, these claims were difficult to substantiate in the documentary record, and the archaeological record was silent. C. W. Hunt's (1988) study of rum running on Lake Ontario, however, puts the study region at the periphery of the significant bootlegging. The only substantiated rum running near a survey area was by Norm Conley of Wolfe Island. During his decade-long career, Conley transported illegal alcohol by car and boat, but he is most famous for his use of use of a plane to fly alcohol out of the Long Point (Wolfe Island) area (Hogan and Smithson 1982:496; Hunt 1988:174-175). The location of Wolfe Island seems to have lent itself to rum running: any farmer with a barn and rowboat possessed the capital necessary for part-time bootlegging. There is also anecdotal evidence of Carleton Island residents traveling to Kingston via the Wolfe Island canal to obtain legal (in Ontario) alcohol for private consumption. Marjorie Crothers (2008, pers. comm.) remembers her father and uncle making this journey on several occasions. Her father brought his alcohol directly back to Carleton Island, but her uncle, slightly more respectful of the letter of the law, hid his on a small island just across the border and would frequently visit his stash while out fishing.

In addition to a significant post-1850 population decline brought on by failing agriculture, another reason for the relative isolation of Sherwins Bay is that the majority of historical activity was focused 3.5 km to the east at Pillar Point Village, also known as Pillar Point Post Office, New Brooklyn, and Ferry Village, which had strong connections with the larger Sackets Harbor (Hough 1854:106; Lee 1989:1,13,46). A cannon was placed in the village during the War of 1812 to protect the Sackets Harbor naval yard, and a ferry connected the two by 1821. The ferry eventually became an extension of the train line, scheduled to meet morning and evening trains at Sackets, thus tying Pillar Point into not only the regional but also the national economy (Hough 1854:187; Lee 1989:10,14,47). Personal boats and the frozen river also offered ample opportunities to connect the two villages (Knowlton 1892). Much like the relationship between Marysville on Wolfe Island and Kingston, Pillar Point Village was in some sense a maritime suburb of Sackets Harbor. Selection of its position seems to have weighed the benefits of a naturally suited harbor and village site against a location that provided easy communication with the more naturally endowed harbor of Sackets. Communication with Sackets Harbor was easy and regular enough that E. Knowlton, a late 19th century Pillar Point storekeeper, leased a second establishment in Sackets Harbor and would occasionally load her cart onto the ferry and peddle along the roads outside Sackets (Knowlton 1892).

Despite this close connection with Sackets Harbor, Pillar Point Village, like Marysville, was largely independent, with its own stores, hotel, post office, sawmill, and shipyards (Hough 1854:106,204; Cook 1934). One of the earliest shipbuilders in the village was Jesse Stone, who built schooners at his yard just west of the village (approximately 370 m west of the intersection of County Route 59 and Stone Road, near a cemetery). Possible launching ways or a dock structure associated with this shipyard remained visible in the 1980s (Lee 1989:6). Other early builders on Point Peninsula were Greenleaf Rand and Sebra Howard, who produced multiple vessels with capacities of 80–110 tons during the 1830s (Lance 1987:20). The most prolific and locally famous Pillar Point shipbuilder, however, was Asa Wilcox, who arrived on Point Peninsula in 1825 at age 20 and owned property there at his death in 1875. He produced vessels not only on Pillar Point, where he was an early shipbuilder, but also on Point Peninsula and at Three Mile Bay and Chaumont on Chaumont Bay. He built the 140-ton *Congress* at Pillar Point in 1836, likely as an itinerant shipbuilder because he did not own the shipyard (Getman property). Between 1828 and 1873, Wilcox produced a minimum of 58 vessels, primarily schooners, but also brigs, barks, and sloops, ranging from 9 to 363 tons (Hough 1854:204; Anonymous 1875; Cook 1934; Anonymous [1980]).

As was also the case at Point Peninsula, several of these ships were crewed by local farmers to supplement their agricultural income. Pillar Point also mirrored Point Peninsula in the importance of cisco seining to augment the local economy. Several thousand barrels of fish were exported from Pillar Point every year during the 19th century prior to the decline in spawning (Hough 1854:106; Cook 1934). This industry allowed farmers to wring every possible benefit from their land, taking advantage of all available natural resources, both terrestrial and maritime. It also bolstered other local industries, such as barrel making. Stephen D. Read operated a cooperage near Sherwins Bay and produced many of the barrels needed to export the salted fish (Stone 1864; Robinson 1888; Lee 1989:9). The location of his shop near Sherwins Bay instead of at Pillar Point Village suggests that Sherwins Bay and the north shore of the peninsula were important cisco fishing grounds. The end of the cisco runs led to a decline in boatbuilding at Pillar Point Village. This combined with the exodus of agricultural families to significantly reduce the population of the village and the point by the turn of the 20th century (Cook 1934; Lee 1989:46).

Storrs Harbor

Native American and Early American Settlement

Archaeological evidence from Storrs Harbor, a location consisting of a narrow cove enclosed by a spit of land and a larger point (Storrs Point) enclosing a marshy bay (Muskellunge Bay), supports the pattern of Point Peninsula peoples, and possibly earlier groups, preferentially settling near narrow bays (Figure 8.37). The Catfish Point collection (NYSOPRHP site number 1521) contains Middle Woodland Period projectile points, as well as artifacts dating from the Archaic through the late prehistoric periods

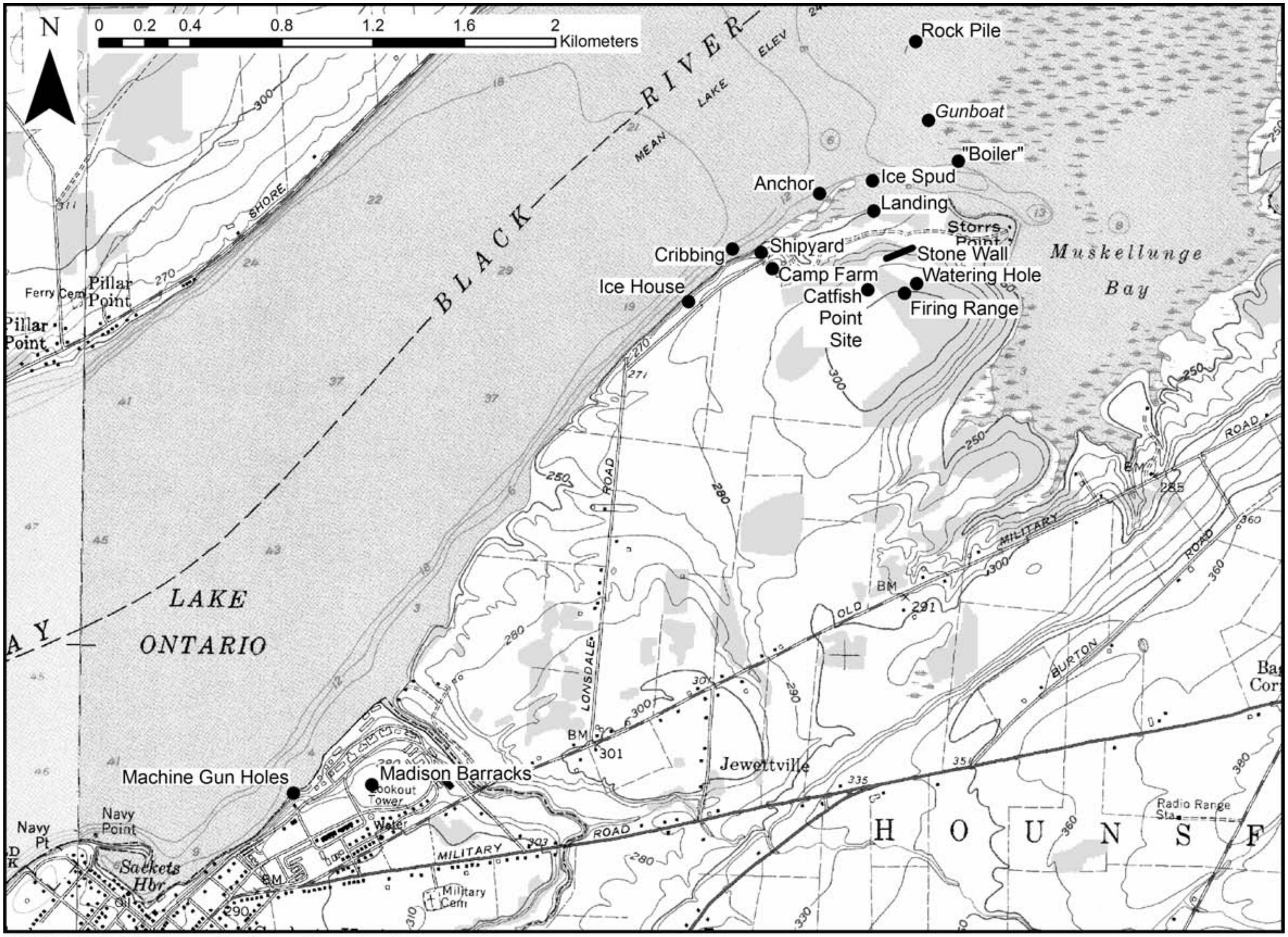

FIGURE 8.37. Storrs Point archaeological results.

(Figure 8.38). Dr. Timothy Abel (2007, pers. comm.) has also reported finding Point Peninsula pottery immediately west of the narrow bay. Interviews with property owners, many of whom are long-time residents who have made extensive subsurface improvements to their property, confirmed that the Native American materials were localized on the uplands of the point rather than along the current shore.

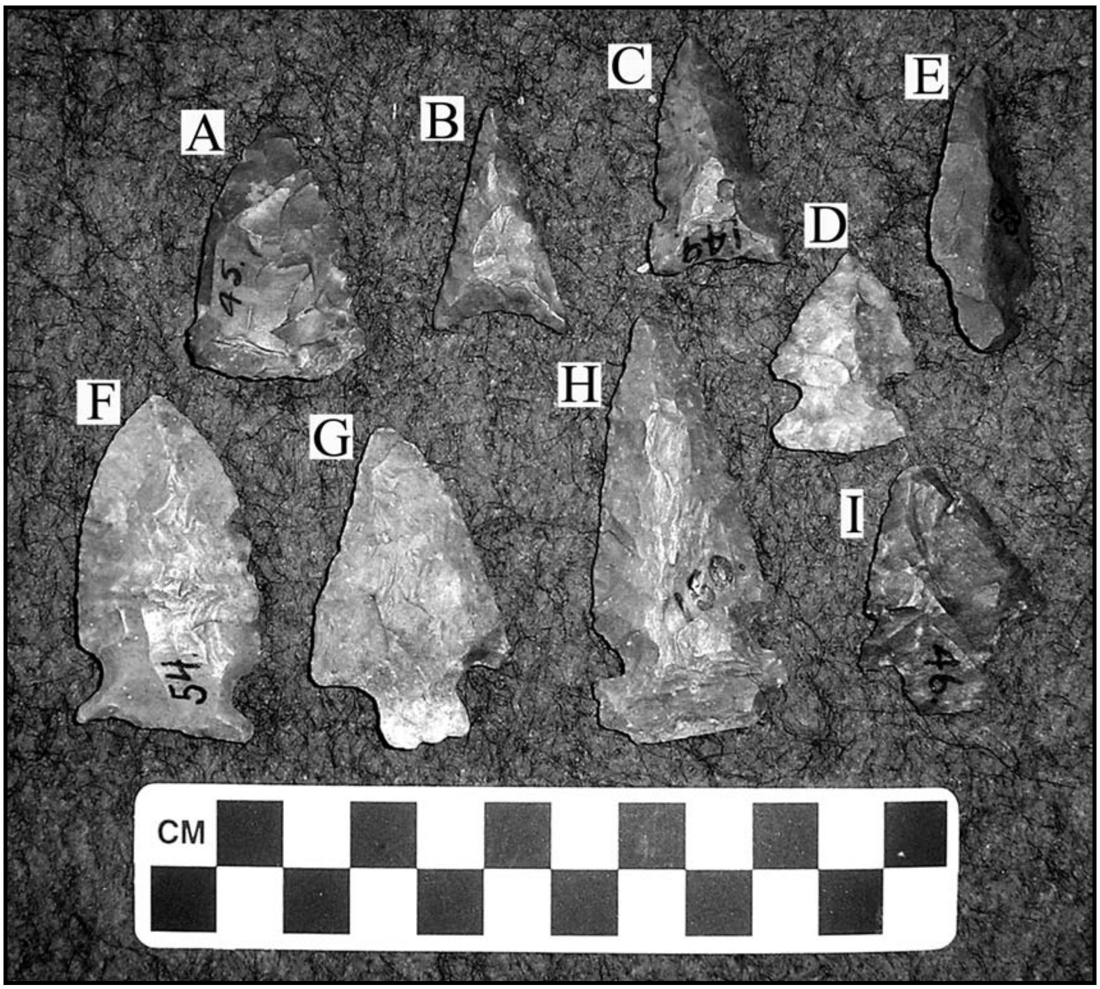

FIGURE 8.38. Representative artifacts from Catfish Point Site. A : biface, B : Levanna-like, C: Otter Creek-like, D: Brewerton Side-Notched or Perikomen Broad, E: Lamoka-like, F: Brewerton Corner-Notched, G: Snook Kill, H: Meadowood-like, I: Snook Kill.

There is little evidence of habitation on the point following European contact, but it is likely that Native Americans continued to visit fishing grounds around the point. The historical and archaeological records resume in the late 18th century, when Lemuel Storrs and Henry Champion acquired the point as part of their large land purchase from Macomb and his associates. Champion and Storrs seem to have planned a village for the point and went as far as to have it platted and to sell lots (Camp 1843). The plan, however, progressed no further, likely as a result of the simultaneous growth of the better positioned and better promoted Sackets Harbor (Melish 1970 [1818]:537-539).

The failure of the Storrs Point village was not unique during this period in northern New York. Abijah Putnam, the operator of an early ferry to Wolfe Island, sold his lands on the St. Lawrence River to Peter Sternberg and John Macomb in 1805 (Casler 1906:149). Macomb and Sternberg then "laid out the ***plan*** of a village, and sold a few lots" (Hough 1854:111 emphasis added). This plan, preserved in Nelie Horton Casler's (1906:147) history of Cape Vincent, shows an orderly village with named streets and numbered lots. The hope of commerce is indicated by a sloop and brig hovering just off shore. There are no docks or wharves, however, to allow these ships to land, indicating that the plan is only a plan and not a map. The plan surveyed by John Mitchell for Storrs and Champion likely had a similar appearance; neither village developed. While there was some early settlement at Port Putnam, Storrs Point seems to have remained undeveloped. The platting of stillborn villages is indicative of the hopes major investors had for northern New York and the celerity with which these hopes crashed as settlement progressed westward.

War of 1812 Shipyard

At the beginning of the War of 1812, the only settlement on Storrs Point were farms near the base of the point close to the road running into Sackets Harbor (Gibson 2005:8,33). Within two years, however, the U.S. Navy stepped into this relative void. With the naval arms race on Lake Ontario reaching its climax in 1814, Isaac Chauncey decided to expand Henry Eckford's shipyard at Sackets Harbor to a second site approximately 3.2 km up the Black River and ordered construction to begin at Storrs Point. The sole purpose of the yard was to construct *Chippewa*, sister ship of the better known *New Orleans,* which was begun at Sackets Harbor at nearly the same time. *Chippewa* was to be a 106-gun ship 55.9 m (183.5 ft.) on the keel and 65.2 m (214 ft.) overall, with a molded beam of 16.8 m (55.25 ft.) and a displacement of 2948 tons (Gibson 2005:65). To that end, a shipyard was hacked from the surrounding woods and by February 1815 barracks, storehouses, blacksmith shops, a mess house, mould loft, and two blockhouses were erected on the site to accommodate more than 400 civilian workmen. Sailors assigned to the yard on work detail, marines present to guard the site, camp followers, and sutlers further inflated the population of the point. Work began on *Chippewa* in early February, roughly two weeks after *New Orleans*, as a result of the need to clear the land and build the infrastructure for the shipyard (Gibson 2005:33-34). White oak stands that were common on the point provided timber for the ship, and planks were obtained from the saw mill in Dexter (Gerald Hess 2007, pers. comm.; Hough 1854:104; Gibson 2005:52). On 14 February 1815, shortly after construction began, news of peace arrived, orders went out to cease construction, and shipment of supplies was cancelled the next day. Chauncey, however, could send only 30–40 men per day south to Utica and back to their homes. With a large force at both Storrs and Sackets harbors, this was a major undertaking. Since he had agreed to pay their wages between the time of their arrival and departure, he decided to keep the men working on the ships rather than pay them to be idle. As a result, construction on both *Chippewa* and *New Orleans* continued into mid-March. When construction finally halted on *Chippewa*, it was approximately half finished, fully framed and covered with partly caulked planking to the sills of the lower gun ports. The lower gun ports were also formed, the orlop deck beams and wales were attached, and all of the upper deck beams were ready (Hough 1854:183; Gibson 2005:34,41,67-68).

Following the war, the unfinished *Chippewa* was, like *New Orleans*, enclosed in a ship house to protect the hull in the event that need should arise to complete the vessel. Nevertheless, beyond the ship house and a ship keeper who took up residence in one of the blockhouses, the shipyard was allowed to deteriorate. The same condition existed at Sackets Harbor where *New Orleans* rotted in its house, surrounded by the poorly preserved vessels of the American fleet and the once again sleepy town (Hall 1818:170; Hall 1829:356-357; Crisman 1989:164,169,172-174). By 1821, the barracks, workshops, and storehouses of Storrs Point had badly deteriorated, and on 5 August 1833 *Chippewa* and its house were sold at auction. The sale stipulated that the structures be removed by November of the same year (Gibson 2005:51-52,54,59). Local tradition holds that the vessel was burned to recover the iron, but Gary Gibson argues in his excellent history of the site that it is more likely that the vessel was dismantled, as was *New Orleans* in 1884, with the wood being sold for firewood or possibly reused in construction and the iron being sold for scrap and reuse (Gibson 2005:60). Gibson's research in contemporary newspapers, which do not mention a fire, and Franklin Hough's (1854:183) use of the phrase "taken down" to describe the removal of the hull two decades after the event, support Gibson's hypothesis.

The site (NYSOPRHP site number A04510.000044) is currently being excavated by Dr. Timothy Abel and volunteers from the Jefferson County Historical Society with the goals of better understanding the arrangement of the shipyard and frontier military life during the War of 1812 (Figure 8.39). The excavations have also brought more attention to a site that had largely slipped from the area's oral history. The shipyard was completely unknown to residents within 1.5 km west of the site in 2007, and one elderly life-long resident of Storrs Point reported that he had been unaware of the site until a few years ago, when it was featured in the media (Harold McMahon 2007, pers. comm.).

Local ignorance of the site may result from the almost complete lack of visible remains to fix it in the public imagination. No structures or foundations remain at the shipyard site, with the reported exception of a possible blockhouse foundation, the existence of which could not be substantiated due to dense undergrowth obscuring visibility (John Keegan 2007, pers. comm.). Ceramics and military buckles were also reportedly washed up on the shore approximately 450 west of the shipyard; these materials, however, were not kept by the property owner and were not available for

FIGURE 8.39. Storrs Harbor Shipyard Site, arrow indicates approximate location of *Chippewa* ship house. View towards the southeast.

analysis (Thomas White 2007, pers. comm.). The submerged archaeology in the area was similarly silent and inconclusive. A stone-filled crib was recorded approximately 40 m offshore and 100 m west of the ship launching location (Figure 8.40). This cribbing is not associated with any known modern or historic structures, and the War of 1812 shipyard is the most proximal possibility. Although the caisson could have been planned as a mooring location for *Chippewa* while the hull was being outfitted, its specific use within the shipyard layout is not clear. It must also be remembered that ice in this region can be devastating, and, despite being intact, the cribbing may have been moved from elsewhere. The underwater survey also found several unidentified iron artifacts. While these pieces cannot be definitively linked to the shipyard, their density is noteworthy. No similar density of iron artifacts was noted in other survey areas. Given the lack of development on Storrs Point except during the War of 1812, it is tempting to link the artifact density with the intensity of military use. Further analysis is necessary to explicitly support this connection.

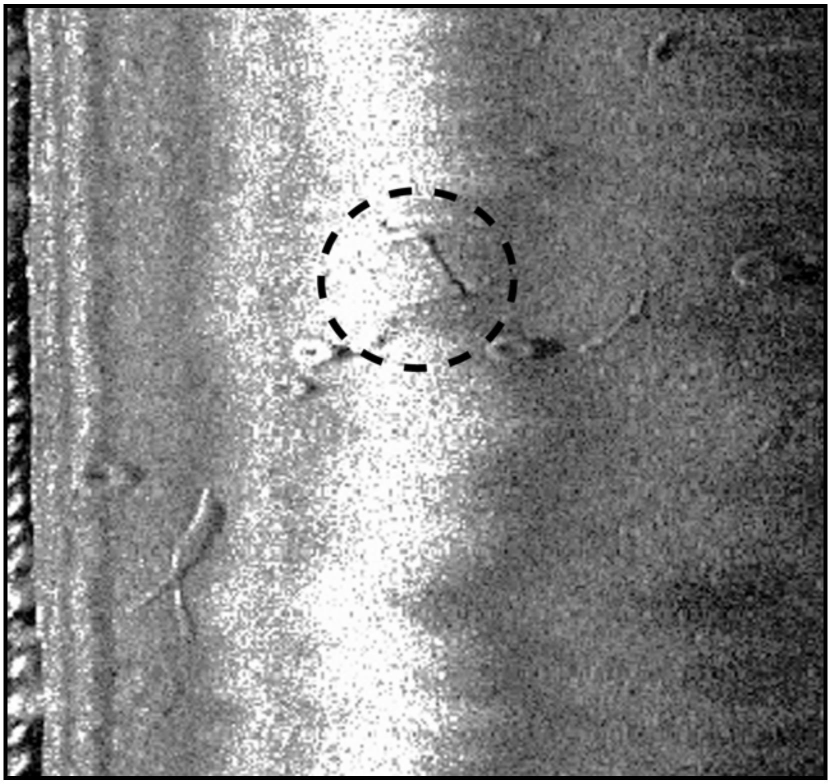

FIGURE 8.40. Side-scan sonar image of stone-filled cribbing near shipyard site, Storrs Harbor.

More directly associated with the shipyard, although still unconfirmed, is what could be the wreck of a gunboat buried in a sandbar formed by the sediments deposited where Muskellunge Creek intersects the Black River. This was identified as magnetic anomalies in the vicinity of a wreck indicated on an 1829 chart (Vinton). A subsequent chart of the same region does not identify the wreck but indicates a small obstruction in the same area, suggesting that the wreck was buried or destroyed in the intervening seven years (Stockton 1836). While it was difficult to correlate the chart with the modern landscape because it contains few discrete landscape features and the shoreline has changed dramatically over the past 180 years, a version of the chart georeferenced ("rubber-sheeted") to identifiable features on a modern topographic chart placed the magnetic anomalies very close to the gunboat wreck (Figure 8.41). A subsequent 5-m

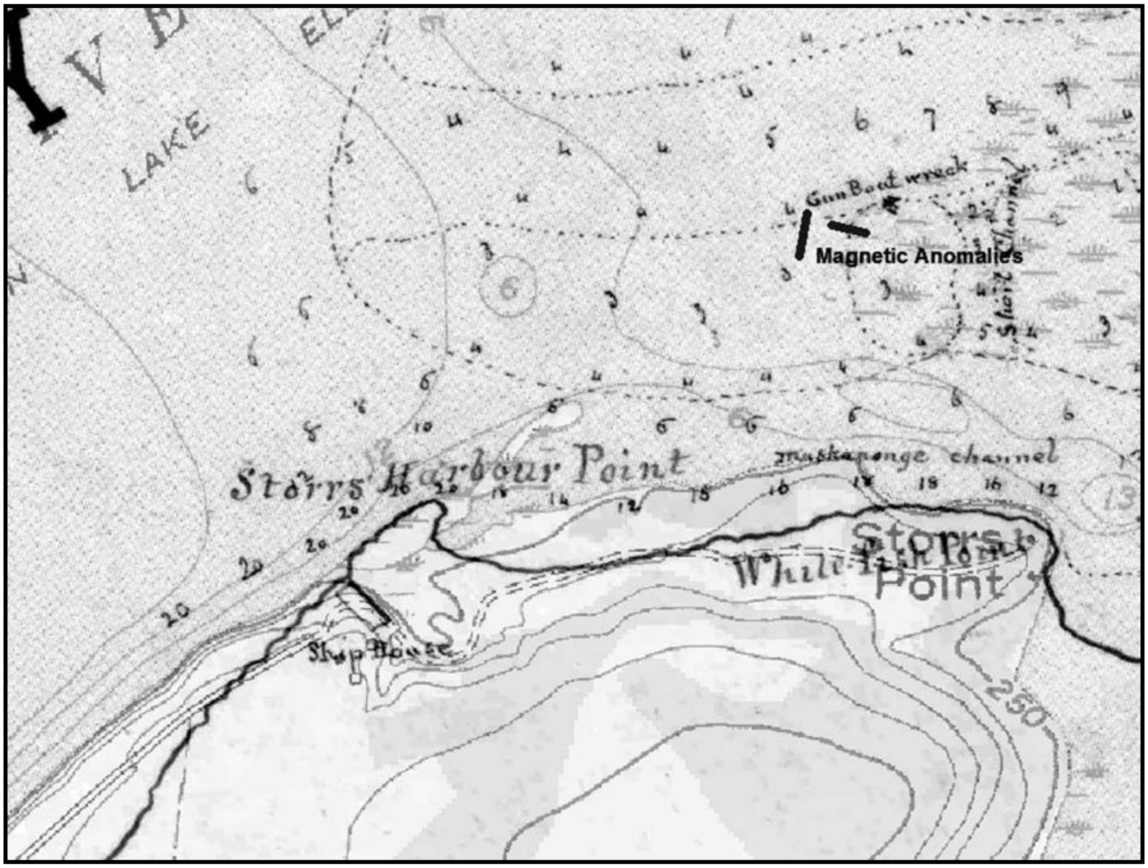

FIGURE 8.41. Portion of ***Sketch (a vue) of the Mouth of Black River*** (Vinton 1829) depicting the location of "gun boat wreck" georeferenced to a modern 1:24,000 topographic map with lines connecting magnetic anomalies superimposed.

interval probing survey covering both the magnetic anomaly area and the location indicated on the historic chart was inconclusive (Figure 8.42). The southwest corner of the probing area, however, did contain enough positive and possible probe obstructions to warrant future archaeological investigation.

The gunboat potentially buried in the sandbar was one of 15 similar boats built at the Sackets Harbor shipyard during the summer of 1814 (Malcomson 1998, 2004). Chauncey (1814) described them as being 22.9 m (75 ft.) long, powered by 40 oars, and capable of carrying 100 men each. As was the case for *Chippewa* and *New Orleans*, the

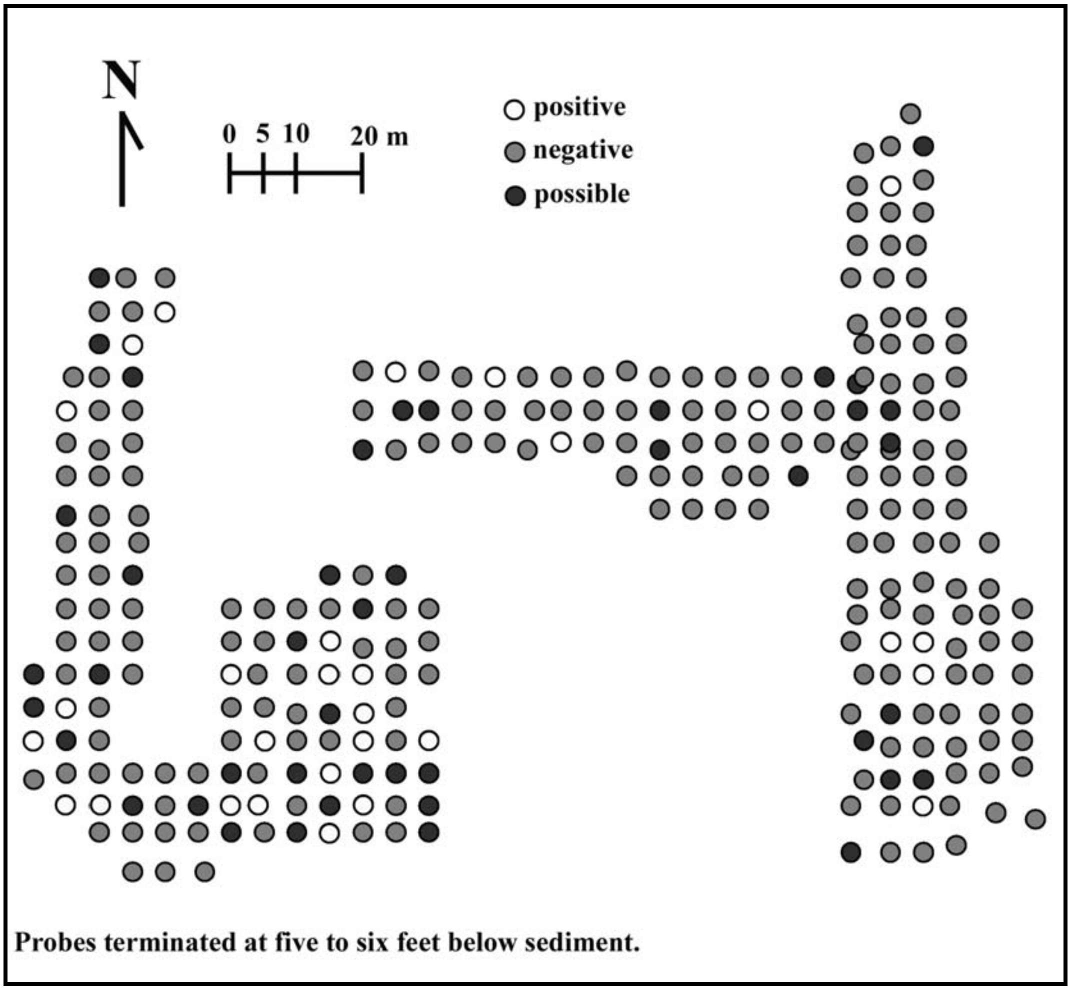

FIGURE 8.42. Results of probe survey, Storrs Harbor.

war ended before these boats were used, and it is doubtful that they were ever armed. With the end of hostilities, these vessels were moored behind the spit at Storrs Harbor, mirroring the state of the main fleet at Sackets Harbor. Sometime prior to November 1818, one of the gunboats broke its mooring and drifted onto the sandbar, where it was damaged beyond repair (Anonymous 1816a:54; Gibson 2005).

If the gunboat wreck is present and sufficiently well preserved, it could address several interesting questions about early 19th century naval construction and the influence of War of 1812 ship construction practices on later shipbuilding. The remains of this gunboat lend themselves to the analysis of the use of centrally designed ship draughts to plan vessels built at remote naval stations and the employment of systematized construction techniques in the mass production of vessels. Both of these practices were in their infancy in the U.S. at the time of the War of 1812 but were widely adopted in merchant and naval construction by mid-century (Thiesen 2006).

Centralized design developed in tandem with the advent of naval architects, ship designers trained in the theory of ship design as much as in ship construction. The division of labor between design and construction initiated with the beginning of naval architecture is one of the hallmarks of modern ship building (Ferreiro 2006; Thiesen 2006). Scientific ship design is often tied to the introduction of iron as a shipbuilding material and steam as a means of propulsion. Both iron and steam industrialized ship construction and caused a major shift in shipbuilding skills and organization. These new technologies required more skills than an individual could master and lent themselves to a production line or shop approach (Thiesen 2006; Ford 2007). The advent of industrialized shipbuilding can be extended beyond the widespread adoption of its acknowledged indicators (metal hulls, steam propulsion, and scientific design) to the development of the construction techniques and work environments that permitted the rapid spread of the iron, steam, and scientific design (i.e. systematized construction and centralized design). The material manifestations of industrialization followed a shift in the theory of ship construction.

Prior to the 19th century, the majority of warships built in the U.S. were designed and constructed at individual shipyards. In these instances, the constructor or shipwright would plan and oversee construction of the vessel from start to finish and would have sole responsibility for its characteristics (Chapelle 1949; Goldenberg 1976). This independent approach to ship construction is evident in the large ships built at Sackets Harbor. Henry Eckford designed and oversaw the construction of eight warships, all of which had unique characteristics that identified them as Eckford designs created specifically for the Great Lakes (e.g., sharp, fast, and shallow hulls) (Crisman 1989; Malcomson 2004). For his smaller gunboats, he had access to plans drafted in 1813 by William Doughty, the chief naval constructor of the U.S. Navy during the War of 1812

(Malcomson 2004). The introduction of centrally planned construction can be traced to the 17th century in the Royal Navy, but the U.S. adopted the practice more slowly (Winklareth 2000). For example, Noah Brown, an associate of Eckford's, used the Doughty draught to build the gunboat *Allen* on Lake Champlain, but made several alterations to the design to simplify the construction and to adapt for shortages in particular shapes of wood (Emery 2003). U.S. naval constructors understood planned ship construction, but they remained willing to adapt the plans as they saw fit rather than merely follow them. It is unknown if or how Eckford changed the Doughty plan to accommodate issues of available materials, time constraints, the environment of Lake Ontario, or his ego. Analysis of the Doughty draught, *Allen*, and the Lake Ontario gunboat will contribute to a better understanding of how this early attempt at centralized control of ship construction was put into practice, how effective it was, and how it developed into the more formalized modern navy.

Similarly, the massive accumulation of labor and materials required to build not only the 15 gunboats but also the six warships begun, if not completed, during 1814, argues for significant organization on the parts of the U.S. Navy and Henry Eckford. There has been no study of how this organization was translated into ships, but other fleets built under times of war stress, such as Arnold's Lake Champlain fleet of the Revolutionary War and the Emergency Fleet of World War I, suggest the employment of systematized construction to speed the shipbuilding (Bratten 1997; Winklareth 2000; Thiesen 2006). One means by which the construction of similar vessels has been systematized is through the use of carpenter's marks. Carpenter's marks were scribed into frames and planks on the gunboat *Philadelphia* (1776), for example, to indicate where pieces should align (Pevny 2008). This technique allowed a single trained shipbuilder to guide the construction of a vessel using unskilled labor. Consequently, several gunboats could be built simultaneously without pulling trained shipbuilders away from the construction of the larger warships. Carpenter's marks facilitated an early form of mass-production, a trend that burgeoned as the 19th century progressed and shipbuilding became more industrialized. Ultimately, ship construction transitioned from a craft to an industry, and the Lake Ontario gunboat may represent an early stage in that transition. It holds the potential to provide evidence for the adoption of both centrally-drafted ship plans and systematized construction and to contribute to our understanding of the early stages of modern ship construction.

19th-Century Agricultural and Recreational Intermission

In preparation for constructing *Chippewa*, Henry Eckford, not the U.S. Navy, purchased a substantial portion of Storrs Point (Eckford 1813). It is unclear if he acquired the lands surrounding the shipyard site in order to harvest their timber or if Champion and Storrs took advantage of the situation to dispose of a large tract of land. At the close of the war, Eckford and Brown sold a 40.2 hectare (99.25 acre) lot that included the shipyard and adjacent spit to Elisha Camp (Camp 1815). Marion Eckford sold the remaining point property to Camp in 1838 (Camp 1838). Shortly thereafter, Camp built a farm within the bounds of the 1815 shipyard, one of only four on the point (Timothy Abel 2007, pers. comm.; Gerald Hess 2007, pers. comm.; Stone 1864). The Camps continued to own the property into the 20th century, although the farmhouse was torn down in the 1950s (Gerald Hess 2007, pers. comm.; Anonymous 1906). The house foundation consists of a well-laid stone cellar with an internal cistern situated in a copse of trees immediately west of the current house on the property, which is an adaptive reuse of the Camp barn. Further archaeological evidence of the Camp's use of the point includes stone walls on the uplands and the remains of an ice house. The stone walls running through the wooded property attest to the fact that it was once cleared and occupied by herds of cattle and fields of grain (Harold McMahon 2007, pers. comm.). The ice house was situated on the cliff shore of the Black River, 500 m west of the Camp barn. The structure itself is no longer extant, but there is a ramp cut into and appended to the cliff face. This would have allowed the ice to be drawn by horse from the river to the house at road level. Concurrent timber harvesting, which permitted the later agriculture on the property, supplied ample sawdust to insulate the ice (Harold McMahon 2007, pers. comm.). Other than the slope in front of the Camp farm where *Chippewa* was built, this provides the only access to the river west of the spit. Possibly associated with this industry, although just as likely a result of ice fishing, an ice spud, used to cut and maneuver ice, was recorded off the spit. Ice fishermen today use similar tools.

During the last three decades of the 19th century, Storrs Point also became a popular picnic and camp location. With only three farms on the entire point at the turn of the century, it was an attractive destination for day trips and sailing excursions originating in the more developed Sackets Harbor and Dexter (Robert Brennan 2008, pers. comm.; Anonymous 1877; Robinson 1888; USGS 1944). By the late 19th century, there were commercial camps and resorts advertised on the point (Anonymous 1889, 1897b). These establishments, however, do not appear on period maps and may have consisted of ephemeral structures on rented land (Robinson 1888; USGS 1944). A mineral-water well was even drilled on the Camp property in 1900, possibly in an attempt to further profit from the resort traffic at the point. The "article" announcing the well is essentially an advertisement and makes conspicuous mention of another mineral-water based resort, Saratoga (Adams 1900).

Four small wrought-iron anchors and a ballast pile identified in the area may date to this period. An entirely wrought-iron single-fluke anchor, 118 cm long, was identified during the diving survey off of the spit. Paul De Minco (2009, pers. comm.) reported finding two single-fluke anchors of similar size while diving nearby during the 1980s. Single-fluke, iron-stock anchors are often used for mooring or kedging, and the small size of these anchors suggests that they were not employed by large lake schooners (Falconer 1970 [1780]:164). It is possible that the single-fluke anchors were deployed by pleasure craft at Storrs Point when the density of similar vessels made puncturing a hull on an upturned fluke a concern. The Ellinger family also recovered from the water near their property on the north side of Storrs Point a 76 cm long folding-stock anchor appropriate for a private sailboat or launch.

A ballast pile consisting of a 10.7 x 4.6 m pile of flat stones was identified north of the sandbar that extends from the point. This pile did not appear to be associated with a shipwreck; it seems, rather, to be ballast offloaded from a vessel to reduce its draft.

The position of the pile in shallow water (less than 2 m) on the sandbar suggests that it may have been deposited by a vessel that found itself stuck on the bar. Alternatively, the pile may be the result of an isolated instance of a commercial vessel reducing its ballast prior to taking on a load at Sackets Harbor or Dexter. Coasters and similar vessels did anchor in the Storrs Harbor/Muskellunge Bay area (Anonymous 1895a). The shape of the pile, however, is not consistent with standard commercial behavior, in which ballast is thrown over both sides of the vessel, forming a double-lobed pile.

1894, the Military Returns

Envisioning the largely vacant lands of Storrs Point as something more than a recreation area, the U.S. Army's 9th Infantry Regiment built a firing range on the point in 1894 (Anonymous 1894a). At the time, the 9th was stationed at Madison Barracks, an outgrowth of the military presence at Sackets Harbor during the War of 1812 and a predecessor to modern Fort Drum. The range consisted of an earth, stone, and log backstop ("stop butt") 68.6 m (225 ft.) long and 5.6 m (18.5 ft.) high with flanking wings and a sandbag-and-log shelter for raising the six Laidley revolving targets. The facility also had a fence on either side to keep the local cattle off the range. Designed for Springfield rifle practice between 200 and 1,000 yards (183–914 m), the range was part of a wide ranging suite of improvements instigated by Colonel Charles Barrett, commander of the 9th, that also included renovations to existing structures and erection of new buildings at Madison Barracks (Anonymous 1894a; Thomas 1978:167). At the time of its completion, the range was proclaimed as a "model" and it was said that "none has created a more favorable impression…safest range in the state by those in a position to know." The same reporter went on to claim that "[a] man, to shoot over it must point his weapon at an angle of 160 degrees, which he will not do unless crazy, and all the soldiers of the Ninth are of sound mind" (Anonymous 1894a).

Local fishermen and hunters were less impressed and feared for their safety while frequenting Muskellunge Bay, which lay downrange of the north-northeast oriented range. They were planning an injunction against the range at the time it was

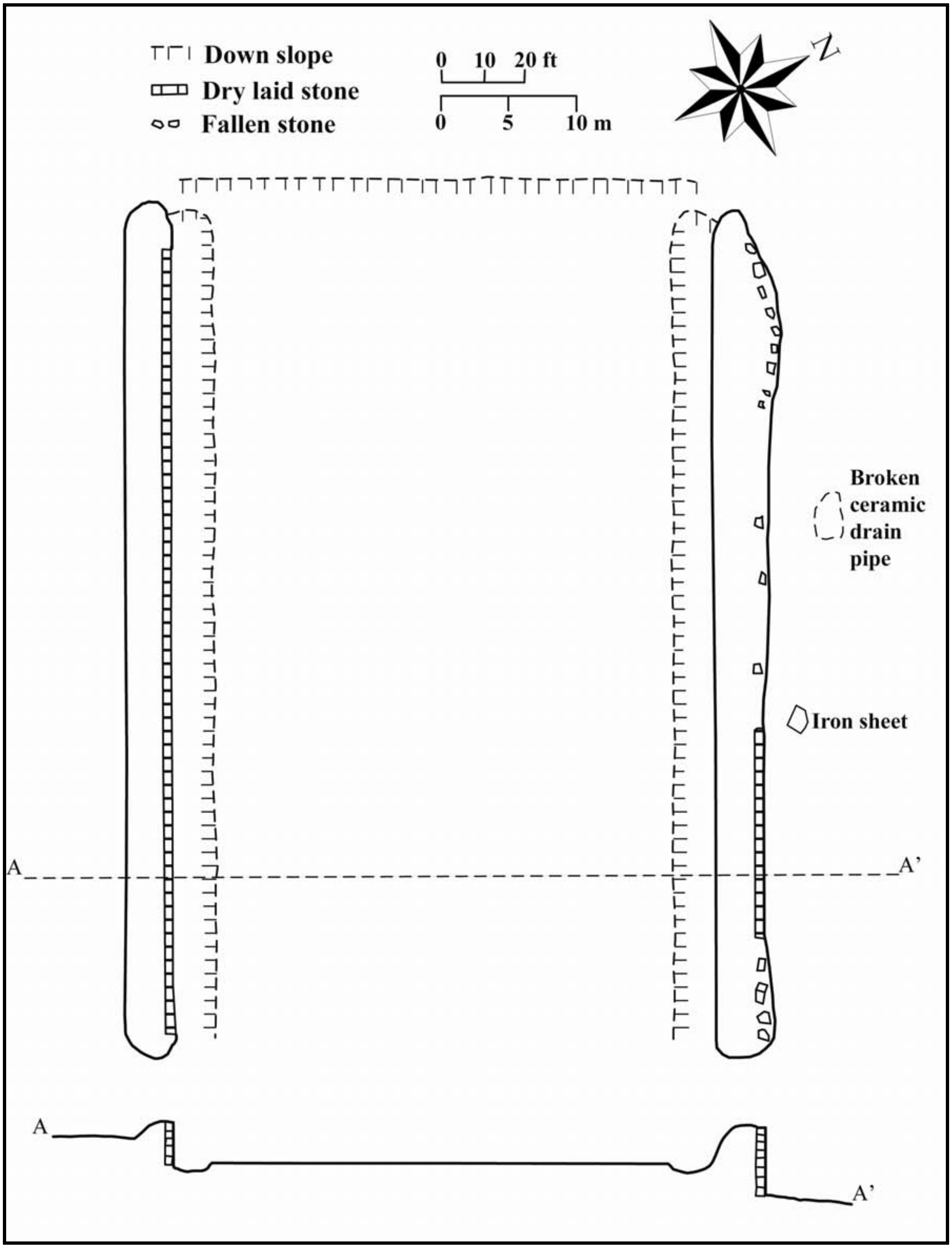

FIGURE 8.43. Firing range, Storrs Point.

completed. Less than a month after opening, less time than it took to construct the facility, the Secretary of War declared the range unsafe and closed it. The Stony Point range opened the next year, with bullets falling safely into the lake (Anonymous 1894a, 1894b, 1895c). The remains of the Storrs Point range (Figure 8.43) indicate that it was substantially built and apparently well planned. The potential for errant bullets is, however, attested by the reported recovery of bullets from felled trees along the north shore of the point (Bruce and Joan Chamberlain 2007, pers. comm.). Regardless of the actual safety of the range, the speed with which it was closed suggests the influence of well-connected sportsmen. The brief period of its construction and use coincided with construction of the Carleton Island Villa and the burgeoning recreation industry in the area more generally (James 1899; Adams 1900). Locally and nationally powerful visitors were now frequenting northern New York. Control of Storrs Point and its surrounding waters had shifted.

Possibly associated with the firing range was an excavated landing place on the north shore of the point. Likely taking advantage of a natural low place in the topography and flat rock along the shore, it was purportedly excavated by men from Madison Barracks as punishment ca. 1900. The landing was used to transport cannon and caissons from Madison Barracks to Storrs Point by barge, presumably to practice amphibious landings and equipment handling (James and Barbara Hearne 2007, pers. comm.; Stockton 1836).

The range and landing, however, were only the most archaeologically visible uses of Storrs Point by soldiers from Madison Barracks. During the winter months, the bluffs of the point functioned as backstops for soldiers firing from the ice. The recovery of substantial numbers of bullets from the west side of the point, in particular between the Hess property and Mill Creek, attests to the frequency of this practice (Gary and Gerald Hess 2007, pers. comm.; Harold McMahon 2007, pers. comm.; Dennis Whelpley 2007, pers. comm.). Closer to the barracks, machinegun practice cut holes into the stone of the shore (Figure 8.44) (Robert Brennan 2008, pers. comm.).

FIGURE 8.44. Holes cut into stone shore by machine gun fire, Madison Barracks.

Through the use of the ice, landing place, and firing range at Storrs Point, the relatively confined space of Madison Barracks was expanded to create an effective training environment. The initial use as a naval base led to the formation of Madison Barracks, which then led the military to return to Storrs Harbor several decades later. The return was not occasioned by a need to utilize the same resources as the shipyard or because the place was intrinsically associated with military activity, but rather because Storrs Point was nearby and undeveloped, a convenient piece of land on which to practice marksmanship and amphibious landings. In some cases, patterns in the landscape are due to the particular history of a location rather than the location itself or fundamental aspects of the culture that inhabited it.

Transition to Modern Appearance and the Reinterpretation of Historic Structures

Like other survey areas, such as Parrotts Bay and Long Carrying Place, Storrs Point remained largely open until the mid-19th century, when its shores began to be subdivided and filled with summer cottages. The point was vacant enough during the

1930s that four men attempted to use it as a landing for a Canadian wool smuggling operation (Anonymous 1936). Most access to the point remained by boat until the 1950s with early owners of small lots simply camping on their property. During this period, a schooner, and later a 30-ft. cabin cruiser, was moored to several posts in the cove behind the spit (Bruce Chamberlain 2007, pers. comm.; Donald Cronk 2007, pers. comm.; Gerald Hess 2007, pers. comm.; John Keegan 2007, pers. comm.). As the road along the north shore of the point was improved and extended (Anonymous 1953), the density of houses along the shore increased to the extent that, as at Nicholson Point, a rind of shore houses surrounds the wooded uplands.

With nearly all of the residents in the immediate vicinity of the survey area post-dating the 1950s, there is a significant disconnection between the history of the place and the current community. This lack of continuity manifests itself in histories that have been fabricated for the sites and structures of Storrs Point. The shipyard has been largely forgotten, but where remembered, it figures in a local myth (based on inflammatory and unsubstantiated alleged practices of the Native Americans) describing an attempt by the U.S. government to exterminate the Storrs Point Native American population by settling African American shipbuilders adjacent to them. There is no record of Native Americans on the point during the shipyard period, and, although African Americans were common in shipbuilding trades such as caulking (Pilling 2008), there is no mention of separate quarters for them at Storrs Harbor. The physical remains of the firing range are also occasionally linked to the shipyard by making them a redoubt for the defense of the ship and shipbuilders. In other instances, the landing place and firing range are tied into a single narrative in which cannon were brought onto the point via the landing and then fired at or from the firing range. In some cases, the life of the range was extended from its approximately 20-day span to several generations, reaching from the American Civil War to World War II. These stories reaffirm the tendency of humans to reinterpret historical landscapes in the light of their own prejudices, experiences, and partial understanding of the past. They also argue for the value of inquisitive and rigorous local historians. Accurate histories of the shipyard and firing range were not accessible through the surface archaeological record alone. They relied heavily on the work of Gary Gibson and Robert Brennan, who were not satisfied with the available oral history and pursued the past through primary documents. The activities and generosity of similar individuals in many of the survey areas have contributed significantly to this synthesis.

CHAPTER IX

LAKE ONTARIO MARITIME LANDSCAPES: REGIONAL SCALE

> …the story of the past can unknowingly be altered, through error and bias, by the very people who wish to discover it. It is therefore comforting to know that the final picture will be drawn by the synthesis of numerous individual accounts such as this. (Storck 2004:xvi)

Introduction

One aspect of human consciousness is the ability to perceive patterns beyond the immediate environment; to identify trends in landscape and culture that extend beyond the immediate sphere. This ability allows humans to react effectively to new experiences, and allows for broader anthropological interpretation of the archaeological and historical records. Similarly, many human actions are founded on subconscious perceptions of the surroundings. Some of these perceptions, grounded in human evolution, are nearly pan-human; others grow from cultural traditions, taught by subtle hints and repetitive reinforcement nearly from birth, and are unique to a specific group. Subconscious perceptions of the landscape are not generally explicit in the primary historical record but are accessible through synthesis of archaeological and historical data. Four regional scale trends of human perception that manifest themselves in the historical Lake Ontario littoral landscape are ephemeral landscapes, permeable boundaries, danger in the lake, and factors of change.

Ephemeral Landscapes and Ice Roads

An attempt to understand a cultural landscape is an attempt to understand daily life within that specific place. However, much of what defined daily life for past peoples is lost and unknowable today. Smells and sounds are the most obvious of these difficult-to-recreate aspects, but so are even more ephemeral events. Smells and sounds are visceral experiences that can trigger strong memories and reactions, but they tend to pale when received second-hand. Explanations or descriptions of sounds and smells of the past, even those well-known in the modern period, seldom generate the same response as the smell or sound itself. These stimuli can, however, be recreated in a living history environment based on the archaeological evidence of what was present to give off odors and make sounds. Ephemeral experiences (seeing meaningful clouds, constellations, marks on trees, etc.) are more difficult because they do not generate archaeological remains and are often accepted without comment by local residents, so that they appear only obliquely in the documentary record. Ice was one of these ephemeral experiences that affected perception of space, community, time, and distance. During summer, historic lake transportation was by water or over often-difficult roads, but, during winter, ice closed some routes while opening other entirely new ones and modifying others.

The most often cited effect of ice on Lake Ontario was the close of navigation, generally from mid-December to mid-March. This dependable occurrence structured how merchants and sailors viewed yearly cycles, both on the lake and ashore. Economic, social, and domestic planning had to take into account the active sailing season and potentially idle winter. The frozen months likely influenced the mixed economy of the lake shore, with many sailors also involved in shipbuilding, farming, and other terrestrial occupations. It may have also been the cause of many late-season wrecks as owners pushed crews to make one last trip before the long unproductive winter despite deteriorating weather (Murphy 1983). While the generally dependable length and severity of winter may have influenced poor decisions, an early freeze or late thaw could also wreak havoc with transportation. For example, the newly appointed Governor of Canada, Sir Charles Metcalf, was forced to arrive through New York City in March 1843 because Quebec was still icebound (Ten Cate 1982:95).

Not every local transportation network closed during winter; some were simply modified. With the St. Lawrence partly frozen, vehicles could still be loaded onto the Wolfe Island ferry by driving onto the frozen river to an improvised dock at the edge of the ice. The ferry bridged the ever-narrowing gap until the river was completely frozen (Johnson 2006:20). At that point the Wolfe Island Canal became a thoroughfare for ice skaters rather than vessels. In 1876, five youths from Cape Vincent skated through the canal to Kingston in 80 minutes, somewhat faster than the steamer *Maude* could make the trip (Fitsell 1986:10). Frozen and snow-covered roads also made overland travel easier. "With the temperature below freezing, wet spots and streams had a solid surface, ruts were buried, insects non-existent, spillage and spoilage were not a major concern, and short cuts were feasible" (Wood 2000:121-122). It was possible to travel 11–15 km per hour in a sleigh over almost any cleared trail, while summer travel on minimally improved roads was often limited to 1.6–3 km per hour (Wood 2000:121). Frozen conditions also allowed for shorter overland routes by reducing the need to travel around embayments or to detour to bridges or fords; the ice itself formed a continuous bridge. In 1824 Lieutenant J. C. Morgan described this practice for the benefits of prospective immigrants:

> The traveler who passes through Canada for the first time at this season of the year, will begin to feel somewhat nervous, when his driver instead of rounding a deep and circuitous bay, urges his horses…right over the bank of the river or lake, and makes directly across the ice for some land mark in his route. (quoted in Mihorean 1989:105,107).

These frozen routes were used for both commerce and socialization, greatly increasing the effective economies and communities of the lake shore during the winter months. This practice also allowed stagecoaches and sleighs to temporarily replace ferries on the Kingston-Wolfe Island-Cape Vincent route, often with the same stage making the entire trip (Anonymous 1926a; Cooper 1980 [1856]:40).

The ice-coaches on the ferry routes were only one aspect of a much wider icebound transportation network that appeared on Lake Ontario once the ice was thick enough to bear humans, horses, and carts. Entirely new routes crisscrossed the ice and shore, traveling over land or water, whichever was most convenient. John Bedford traveled long distances by foot and ice-skate over the ice during the mid-19th century often preferring the ice to overland routes. He traveled 29 km from his home near Cape Vincent to Sackets Harbor in half a day and set off on foot over the ice from Grenadier

Island, intending to travel to Bath, Ontario and back (Bedford 1998:138,144,159,172). The ice also offered a cheap and easier route to move heavy loads between island and the shores of bays. In one instance a house was moved between points of land within Chaumont Bay (Van Doren 2006), but more commonly agricultural products were carried to mills or market (Mark McRae 2008, pers. comm.; Anonymous 1926a; Wood 2000).

The icebound transportation of goods and produce continued trade through the winter, but the scale and participants were very different from those of open-water lake navigation. Much lake shipping, especially by the mid-19th century, was at the industrial scale. Lakers were designed to carry the maximum amount of cargo within the confines of Great Lakes channels and harbors. These vessels were part of an international system that moved raw materials from areas of production to areas of utilization. The ice halted this trade at the same time that it opened a more democratic mode of transportation. Farmers could move their goods over the ice by means of their own vehicles (carts, wagons, etc.), rather than relying on ships belonging to and controlled by others. The navigation season was for the mines, timber industry, and major grain producers; the ice season was for the subsistence farmers and personal production. In many cases the same individuals fed materials into, or contributed labor to, both systems, but the onset of winter seems to have shifted the focus from national and international to personal and local.

The democratization of lake travel during the winter is also indicated by the proliferation of illegal lake trade and travel during the winter. British soldiers from Kingston utilized the ice as a means to desert (Bedford 1998:67). During the summer, fleeing north left a soldier under constant threat of being recognized and returned, and fleeing south required a boat, but the winter allowed a soldier to simply sneak south over the ice using means completely within his control to quickly reach U.S. soil. Similarly, the ice created an excellent highway for smuggling. Hart Massey, the Revenue Collector at Sackets Harbor, lamented this practice in 1809:

> Nature has furnished the smugglers with the firmest ice that was ever known on this frontier. There is scarcely a place from the Oswegatchie to Sandy Creek, a distance of 200 miles, but that the ice is good. Sleighs pass Sackets Harbor ten miles from the shore, and all the force I can raise is not sufficient to stop them. (quoted in Cain 1987:23)

Revenue collectors were equipped to intercept ships and boats violating the 1807 embargo but were stymied by the ice. As was the case with Wolfe Island during Prohibition, the natural environment of the lake and the imposition of an unpopular law offered local residents the opportunity to make a substantial sum of money with minimal capital investment.

Travel on the ice, however, was not always safe. Falling through and getting lost were the primary concerns. It was not uncommon for sleighs and carts, too heavy for the ice, to break through, often killing the horses and passengers (Cosgrove 1973:53; Lance 1987:35,37). John Bedford relates an account of the dangers of traveling on foot across ice. His brother-in-law, Leroy, and a friend attempted to cross Chaumont Bay from southern Cape Vincent to Point Peninsula. They fell through the ice near the middle of their journey and the friend drowned. Heading directly for shore, Leroy fell through three more times before finally making it to land (Bedford 1998:159-160). Travelers, even life-long residents, were also in danger of getting lost, especially at nightfall. The frozen lake was essentially a barren plane, and accumulations of ice and snow imparted to the shore a very different appearance from what a traveler saw during the summer months. The lighthouses and navigation lights along the lake shore were also extinguished at the close of the shipping season; travelers on the ice did not even have the benefit of those navigational aids (Palmer 2003:44). For these reasons, ice travelers often stayed within sight of shore and walked from point of land to point of land with the plan of stopping at any available farmhouse when night began to fall (Bedford 1998:144).

Regularly traveled routes, such as between Point Peninsula and Chaumont and Three Mile Bay, or Wolfe Island and Kingston and Cape Vincent, were also marked to delineate the safest route and limit the possibility of getting lost. As early as the 1850s, these roads were laid out by local residents who intended to use them. The roads were marked using evergreen boughs either held by holes melted in the ice or mounds of frozen slush. Ridges formed by the expanding ice were also cut down by these crews to make it easer for sleighs to pass (Van 1929; Hogan and Smithson 1982:491; Lance 1987:36-37,55-56; Johnson 2006:20). These roads represented a significant investment in time and were permanent within the bounds of the season, as demonstrated by the use of planks to continue the ice road onto shore during the first weeks of warmer weather (Lance 1987:56). These roads were also based on extensive local knowledge and an intimate acquaintance with the lake environment. Roads were laid out to avoid known dangers. Cracks caused by the expansion and contraction of the ice were related to water depth, topography, and the shape of the shore. Thin ice resulted from fast currents, which often occurred at narrows or near points (Lance 1987:36,56). Both such hazards tended to occur in the same locations every year.

The ability to read the ice and choose the safest route, either for a personal journey or for an ice road, was part of the Lake Ontario littoral culture. It was learned through personal experience and oral tradition, and those who had an aptitude for it were valued members of the community. As with all learned traits, some individuals were better naturally endowed than others. Orville "Tricky" McDermott, for example, was an accomplished and trusted ice-roader on Wolfe Island. Each season he would test the ice and identify dangerous locations, which he would then bridge with planks. This activity was not solely for the betterment of the community. He also charged a toll to use his plank bridge (Marshall 2000:33).

Despite the intensity of use, investment of time, and required cultural capital surrounding these ice roads, their archaeological signature is almost nonexistent. With the exception of the wrecks of wagons, automobiles, and snowmobiles marking the locations of disasters far from shore, the only archaeological evidence of these roads would be where they made landfall. It is likely that these locations took advantage of natural and modified landscape features such as landing places, hards, stream mouths, low places on the shore, and ferry landings. None of these locations, however, have been ascertained from the historical record or identified archaeologically. Despite this invisibility, ice roads were a major aspect of the northern maritime cultural landscape, effecting how distance and community were perceived, and their presence needs to be accounted for in reconstructing past landscape use.

Boundaries and the Pan-Lake Identity

The modern international boundary through Lake Ontario, similar to the waterline, is an arbitrary line dividing the lake but not its history. This border would deny that the waters of Lake Ontario have long served as a communication and trade thoroughfare that links the surrounding lands; rather, it tries to present the lake as a natural boundary between nations. Through the first quarter of the 19th century, settlements along the lake shore were terrestrially isolated, separated from neighboring farms and villages by substantial expanses of woods and poor roads. Nevertheless, water transportation and regular communication along the shores and across the lake led to strong connections among the communities throughout the basin.

These connections are clearly evident as far back as the Late Woodland Period. Not only was there overlap between the ranges of the Owasco, centered in central New York and the Pickering, centered in southeastern Ontario, at that time (ca. A.D. 1100), but evidence of both cultures also appears at some sites in eastern Lake Ontario (Ritchie 1965:253,273; White and Montgomery 1994:26; Abel 2001:169). It is unlikely that different members of these groups simultaneously inhabited the same sites, and the two cultures may not have perceived themselves as distinct in the same way that archaeologists do. The mixture of culture traits along the shore does nonetheless suggest that there was an exchange of ideas, if not commodities and spouses, with the lake as the likely thoroughfare.

During the subsequent Iroquois period, the lake was certainly treated as a thoroughfare at the same time that it was observed as a boundary. During this period, the Iroquois occupied the south shore while the north shore was generally the domain of the Huron-Wendat. Both groups seem to have utilized the lake and its feeder rivers as a transportation network. This network may have played a role in the formation of the Five Nations Confederacy. The Finger Lakes and central New York river system formed a radiating pattern of navigable waters connected, either directly or through portage routes, to southern and eastern Lake Ontario. The lake acted like a railroad roundhouse, connecting the spokes and drawing the region into a single lacustrine/riverine network. These easy communication and trade routes may have fostered alliance among the disparate Iroquois tribes that eventually formed the Five Nations. Once allied, the Five Nations used the lake as a vehicle for expansion, pushing north along the shore and likely displacing the St. Lawrence Iroquoians. The St. Lawrence Iroquoian in turn seem to have moved north, across the St. Lawrence River, and were likely absorbed by local Huron-Wendat groups (Ewing et al. 1995:26; Abel 2001:180; Adams 2003:67). The ability of the St. Lawrence Iroquoian to move across the natural boundary of the St. Lawrence hints that, unlike the broader expanse of Lake Ontario, it was not a discrete cultural boundary. The Iroquois and Huron-Wendat were certainly distinct and often antagonistic groups, and there is ample historical evidence that the Huron-Wendat avoided what they perceived as Iroquois territory on Lake Ontario (Charlton 1882; Wakefield 1976:189), but the close proximity of these cultures across the St. Lawrence may have blurred some of the distinctions between groups. Eventually, the Iroquois pressed farther north, drove the Huron-Wendat from the north shore, and established several temporary villages at strategic portage routes along the shore, all the while using littoral routes around the lake as primary lanes of travel. Throughout much of the 17th and 18th centuries, these route remained active, connecting inland villages around the lake via river and shore routes. This transportation network was effective enough to help the Iroquois defend against French incursions and was eventually partly co-opted by the French as they came to dominate the region.

In time the British took Lake Ontario and the surrounding region from the French and began to build upon the Native American and French trade routes, employing coastal, cross-lake, and inter-Great Lake trade networks. The British, especially following the American Revolution and the arrival of the United Empire Loyalists to southern Ontario, built ports at many of the same locations that the French had occupied as unimproved harbors and trading stations and that Native Americans had used as portage points. There was a good deal of consistency of occupation around Lake Ontario, with culture after culture occupying nearly the same locations. In the case of ports, this had less to do with a maritime *longue dureé* than with environmental possiblism, the only viable harbors along much of the shore were river mouths, which also permited access to interior resources.

With the coming of the Loyalists the lake became a major thoroughfare, connecting not only the shore communities but two formerly belligerent countries. Loyalists, for whom it was no longer safe to live in the U.S., and "late loyalists" interested in cheap lands streamed across the border, coming up the St. Lawrence River and across the lake and river for the remainder of the 18th century. This unobstructed movement by water allowed for the formation of a pan-basin culture. While the Loyalists were politically separated from those who remained in New York and New England, their modes of subsistence and much of their material culture was identical. Consequently, early southern Ontario developed in much the same way as New England, with small independent farms and a frontier spirit. There was also direct movement across the lake, even after the international border was established.

The Embargo Act of 1807 put substantial pressure on New York farmers, whose primary market was Canada. Rather than lose revenues, many decided to smuggle their goods across the border for increased profits. With the close of the war and the lifting of the embargo, trade resumed on Lake Ontario. Even during times of international stress, such as the Upper Canada Rebellion (1838) and the Oregon Territory War scare (1844-1846), vessels continued to move between international ports, maintaining the local and national economies and shore-wide networks. These connections were strong, as were the financial forces that drove many of them.

Writing about the early 19th century, John Wiley Bedford (1998) described the uncontested movement of his family from New England to Canada and from Canada to New York. Also at the level of a single family or individual but from an archaeological perspective, the Vorhees site likely gives physical evidence of the porosity of the border, and possibly the presence of a pan-lake identity. The use of British military buttons on a U.S.-controlled island named for a British Governor argues for a border that was permeable and often disregarded during the early decades of the 19th century. Meanwhile the mixture of British, U.S., and Canadian coinage suggests the isolation of Lake Ontario from the U.S. and Canadian heartlands during this period, making it necessary to use whatever currency was at hand, and presumably currency of various nations was accepted. Isolation of this type, easy international communication, and strong trade relationships such as those elucidated by Emily Cain ([1985]:12,14) are the makings of a pan-lake identify (Loveluck and Tys 2006; Noble 2006). This identity, based on shared experience stemming from life on and around Lake Ontario, likely did not engage every resident nor entirely supercede the national identity for even a fraction of the residents. Ontario was, after all established as a haven for those persecuted during the founding of the U.S. The identity may have existed, however, in tandem with the national identities, fluctuating in strength with time and space. The Vorhees Site Brock token calling for “success to commerce and peace to the world” tantalizingly but inconclusively suggests such an identity.

The arrival of railroads and the telegraph during the 1840s began to erode the pan-lake identity by introducing outside influences and drawing Lake Ontario into Canadian and U.S. national identities. The openness of littoral residents to these identities is evident in the application of toponyms such as “Mexico Bay” drawn from contemporaneous foreign wars. Even so, the economic and social drive to maintain connections remained and manifested in major institutions such as the Wolfe Island Canal. The canal existed for no other reason than to cross the international boundary in pursuit of commerce. Conceived during one period of U.S. and Canadian tension (Oregon War scare) and flourishing during another (American Civil War), it failed not because of international strife but because a more efficient means of linking east and west, and also to an extent north and south, was achieved.

There are other examples from the area, such as Garden Island and D. D. Calvin. Calvin was a timberman from the Clayton, New York area, who in 1836 relocated to Garden Island, situated between Wolfe Island and Kingston, because it offered the best location to collect and raft timber to be sent down the St. Lawrence. According to family memoirs, Calvin always considered himself an American, despite his several decades of residence in the Canadian domain. He owned and maintained his family farm near Clayton until his death and upon his death he was buried in Clayton next to his mother and first wife. This idea of temporary citizenship was likely reflected in the structures of Garden Island, both buildings and wharves, which are almost entirely wooden and often described as lightly built (Calvin 1945:10,14-15,162; Swanson [1990]:16). The influence that this one man's perception of himself had on the built environment is remarkable, especially when the length of his tenure on Garden Island is compared with the Carleton Island Villa and Wyckoff's abbreviated tenancy there.

During the 20th century, Prohibition, like the 1807 Embargo, provided ample evidence of the economic and personal networks that continued to span the international boundary using Lake Ontario as a major transportation route. This trade was partly driven and financed by outside forces but was manned and operationalized by local lakemen and farmers. Paralleling this trade in a legal manner, in 1909 the Canadian and U.S. governments granted the other's ships the right to pass freely through the Great Lakes, irrespective of international boundaries, while reserving coastwise trade for their own nation's vessels. This treaty reconfirmed what had always been true: the Great Lakes were a commercial and communication thoroughfare that worked best when unobstructed. On Lake Ontario, the coal trade, represented by the docks and barge at Wolfe Island, was the primary beneficiary of this agreement. Use of Great Lakes water and the maintenance of that resource and the water level have also brought the U.S. and Canadian people together, most recently with the Great Lakes – St. Lawrence River Basin Sustainable Water Resource Agreement (2005).

Clearly, there are long-standing links between the shores of Lake Ontario, irrespective of the different political boundaries that have divided the region. Lake

Ontario, like other large lakes, is a maritime system. The inhabitants of these shores are and have been linked by a common resource and easy communication. Much of this commonality began following the American Revolution with the influx of United Empire Loyalists, who set up similar economic and material cultures but different political systems. These differences have perhaps grown in the intervening two centuries due to the development of southern Ontario as a major population center in Canada and the generally sparse population of northern New York, combined with the realignment of shore transportation along shore roads rather than coastal sailing routes. Most people no longer have direct access to the lake and shore roads have replaced the lake itself as the primary link between littoral communities (Williamson 1994:102). Roads, unlike the lake, are interrupted by the waterways and associated border crossings that separate the two nations, making distinctions more clear. It is impossible to cross from Canada to the U.S. by car and remain unaware of the change from citizen to alien, whereas by boat the transition is seamless and easily ignored. The lake remains a symbol of the links between communities and certainly binds them in their concern for its health and maintenance, but the reliance on shore roads also reinforces the lines between districts and nations.

Lake Ontario as a Dangerous Place

Just as perception of the international boundary has shifted with time and culture, so has the danger associated with the lake. The most striking variance in the perception of threats was between Native Americans of the Late Woodland Period and European Americans/Canadians of the pre-20th century. For many Great Lakes Native Americans during the Late Woodland period, lakes were the home of the malicious horned serpent Mishi Ginabig and served as its portals to the human realm. The lake itself was consequently viewed with suspicion. If properly appeased, Mishi Ginabig could provide safe passage and good fishing, but it could just as easily cause a drowning. The enemy of Mishi Ginabig and protector of humans lived in the sky and was personified by thunder (Martin 1999:199-202; Wonderley 2004:112-133). Conversely, Europeans tended to rank thunder among the threats on Lake Ontario; the lake itself was seen as benign until it was influenced by an outside force such as winds or storms (Hall 1829:35; Chambers 1968 [1854]:98-99; Milbert 1968[1828]:148; Murray 1969 [1856]:105). In European opinion, being on the water made humans vulnerable but was not the root of disaster. This belief can be traced back at least into the 18th century in North America and Europe, before which time the relationship between threats and storms becomes less clear (Stewart 2004:152-157; Flatman 2008). For example, during biblical times the threat was often perceived as coming from storms, while some northern European myths mirrored those of the Iroquois, and the classical Greeks had Poseidon, a sea spirit who often acted through storms (Borsje 1997; Paul 2004; Flatman 2008). There is also a distinction in northern European mythology between fresh- and salt-water threats, but, given the regular reference to Lake Ontario as an "inland sea," the size of the water rather than its mineral content can be treated as the dominant force in Great Lakes mythology (Wilson 1824:55; Barry 1996:61). From the perspective of both Europeans and Native Americans, without the benefit of modern meteorology, the lake and storms were separate entities that posed individual threats that were worth overcoming in the pursuit of trade and communication.

Why did these groups perceive the same body of water differently? One possibility is the repercussions of lake-level rise during the Middle Archaic Period. Although 4,000 years is a long period for such an experience to be preserved orally and replicated in myth and ritual, this experience may have impressed littoral Native Americans with the mercurial nature of the lake. (Noah's flood, another water catastrophe whose retelling reaches back millennia, by comparison was purportedly caused by an outside force through 40 days of storms.) The belief in horned serpents throughout the Great Lakes region also suggests that the rise of Lake Ontario was not likely the foundation of the myth, though the other lakes did undergo similar massive fluctuations in depth. Differences in the watercraft used on the lake by the two cultures and differences in their maritime traditions more broadly may offer a more tractable explanation. These distinctions can be reduced to the differences between bark canoes and framed ships. Bark canoes were stalwart craft, often up to 11 m long and capable of carrying more than 900 kg. They provide a stable and safe platform for fishing, shipping, and travel. Their low gunnels, however, made them susceptible to swamping and occasionally capsizing, and they were easily damaged, often requiring repairs at the end of every day (Adney and Chapelle 1983:7-13). As a result, waves (rather than the wind that causes them), semi-submerged logs, and other lake-bound dangers presented the greatest threats to these vessels. Canoes were almost always worked close to shore, within an easy run to safety in the event that a storm should develop. The lee shore that vexed sailing vessels on Lake Ontario was the ally of the canoe. This lack of fear of storms was personified by the Thunders who occasionally drove Mishi Ginabig back under the lake, preventing it from invading the human world. European ships, conversely, were not generally affected by the lake itself unless it was greatly agitated by a storm. Even in these circumstances it was wind and shore that caused the greatest concern. Traveling across the lake and requiring a harbor, rather than simply the shore, for safety, these ships were far more susceptible to storms than were bark canoes. Of course, neither these maritime traditions nor the associated perceptions of danger were limited to Lake Ontario. The use of bark canoes and a belief in horned serpents stretched across the Great Lakes, while European lakemen were clearly influenced by generations of seafaring tradition. Similarly, the materials involved in building various types of vessels and the economies that necessitated them differed between the cultures. Differences between Native American and European American/Canadian perception of danger, vessel types, maritime routes, traditional physical environment, and political economy were thus intertwined and self-reinforcing.

During the 19th century, the Canadian fear of storms was supplemented by another source of concern, U.S. invasion. During the War of 1812, the U.S. successfully attacked Toronto, was repulsed at Queenstown Heights, and blundered a major invasion of Montreal via the St. Lawrence River (Myers 1989 [1843]:59-76; Elting 1995:149-151). Despite this inability of the U.S. to capitalize on its extended and permeable border with Canada along the St. Lawrence River and Lake Ontario, the Canadians were deeply impressed with the potential mischief that the U.S. could cause in this area (Richardson

1916:15). The effects of these non-events are clearly written on the landscape in the form of the Rideau Canal and the Kingston Road. Both were built to replace earlier routes, the St. Lawrence River and Danforth Road, that were judged too accessible to U.S. attack. The U.S. seems to have been less concerned with a Canadian attack, likely because its main east-west thoroughfare, the Erie Canal, followed an inland route, the lake did not border on a major population, and the St. Lawrence River did not provide direct access to its heartland. However, as northern New York developed, more investment was made for its defense. Tensions caused by the Upper Canada Rebellions (1838) and the Oregon Territory War scare (1844-1846) resulted in fortifications on both sides of the border, including the rebuilt Fort Ontario at Oswego and the Martello towers of Kingston.

Perceptions of Change

One of the defining features of shore-life is that the shore is always in flux; the water rises and falls, specific resources are available at certain times, transportation options open and close, and so on. Different groups perceived these changes differently. A schooner captain attempting to cross a harbor bar during low water and a tourist faced with the same drop and the inability to tie up to his dock would have viewed a reduction in the lake level differently, and an engineer controlling flow through the St. Lawrence Seaway would have perceived the situation in yet another way. Examples of these differences are nearly infinite, but it is sufficient that culture and experience dictate how short-term changes are perceived and that culture and technology dictate the temporal and physical scale of change that can be perceived. Within these broad boundaries, however, there is ample room for discussion of the perception, or lack of perception, of specific changes.

The 1840s were a tipping point for Lake Ontario. During this decade, urban settlement and its associated industrialization came into their own, the rural populations finally stabilized with balanced demographics, steamboats became a going concern, railroads and telegraphs arrived at the lake shore, and effective all-weather roads finally began to connect communities. These were major changes, many of which were written clearly on the landscape, and they had a profound effect on life along the Lake Ontario shore. The telegraph and railroads brought regular and timely news from outside the region, drawing Lake Ontario closer into the U.S. and Canadian national identities and making the lake accessible to tourists and capitalists. The roads, railroads, and steamboats changed the perception of time and distance, drawing once distant places into the regular sphere of residents, shortening relative distances, and requiring a shift from approximate time to scheduled time. These changes, combined with the increase in institutions such as banks, benevolent societies, and civic foundations, gave people a sense of community and pulled more people and investments into the burgeoning industrial towns.

Despite these significant and interrelated changes that swept the lake, shore, and hinterlands, there is little if any evidence that the lake inhabitants saw the 1840s as a singular decade. These people were not obtuse, so their silence must be a result of the nature of the transformations. All of these changes that reached a benchmark in the 1840s were parts of longer trends. For example, steamboats had been on the lake since 1816 but were not widely accepted until the 1840s and the railroads reached the shore in the 1840s but did not have significant impact on lake shipping until the 1850s. Individual changes during the 1840s likely formed part of a grey continuum of innovation noticeable to the casual observer as a slowly increasing number of tracks, banks, and mills in front of a lakescape of steamboats that incrementally travelled faster. These trends are noted in the primary historical record but often in a general sense spanning more than a decade. It would have required a very astute witness to correlate the changes and perceive them as striking not only individually but in aggregate.

What appears to be a momentous decade from the historical perspective was not singled out by contemporaneous residents, and this pattern becomes even more noticeable at the century scale. The change in the lake margin during the 19th century was amazing. Following the War of 1812, the shore was described by DeWitt Clinton as a "sublime view of immense forest towards the lake, like one prodigious carpet of green and a distant glimpse of the great expanse of waters" (Cain [1985]:6-7). By the end of the century the Ontario shore was part of Canada's heartland and one of its major breadbaskets. The prodigious carpet of green had been transformed into amber waves of grain. At the archaeological scale, a century is negligible. It is often difficult to pin down precontact culture change within 100 years, but at the human scale it is a long time and capable of containing prodigious amounts of change. The life of James Van Cleve is instructive in this instance. Born in 1808, Van Cleve spent nearly his entire life on Lake Ontario and died in 1888. During his eight decades he witnessed the growth of lake shipping, the advent of steam, the improvement of lake ports, the building of the Welland, Erie, and Oswego canals, the decline of sailing commerce, and the decline of commerce on Lake Ontario more generally. Not only did he witness these activities but he participated in them through active involvement in the promotion of steam and the introduction of propeller ships. A keen observer, he noted the changes around him, eventually compiling them in a written and illustrated record near the end of his life (Van Cleve 1877). His reminiscences serve as a landmark, providing a sense of scale for the changes of the 19th century in much the same way that oral history and prominent pieces of physical geography likely served as landmarks for the Middle Archaic peoples as they retreated from the rising lake. While the rising lake was likely apparent to all littoral communities, Van Cleve was a rarity among Lake Ontario residents for having made a definite record, and the value of his book to researchers proves how unique he was.

In considering change at the scale of decade and century, the archaeologist must remember that it was the changes perceived by the contemporaneous people that drove future change. Decisions were based on what was known at the time and the direction and rate that people believed culture, technology, and nature would move. These decisions in turn influenced the landscape and history, repeating the process from day to day and generation to generation. In this light, the often massive amounts of capital invested in short-lived undertakings on Lake Ontario can be understood. The rifle range and planned village at Storrs Harbor, *Chippewa*, the Wolfe Island Canal, and Carleton

Villa, all involved planning, materials, and effort, often in large quantities. Even so, each of these was viable for less than a generation, if it was completed at all. Just as a house can indicate a family's aspirations while the surrounding artifacts show their actual status (Herman 1984), these structures monumentalized the beliefs and hopes of their proprietors, and each abandonment is evidence of the rapid rate of change on Lake Ontario during the 19th century. The innovations and instability of this era allowed families such as the Gildersleeves to make substantial amounts of money but also caused them to support undertakings such as the Wolfe Island Canal that were obsolete before they were complete.

The landscape, too, drove many of these changes. In some instances, such as the Wolfe Island Canal, the new institution was almost inherent in the landscape. The close proximity and strong financial ties between Cape Vincent and Kingston, combined with the tradition of unobstructed maritime trade on Lake Ontario and the shape and position of Wolfe Island, made it a natural location for a canal. Such an undertaking, however, was impractical until the arrival of railroads increased the size of the markets that the canal could serve. These same railroads also caused the rapid decline of the canal as they developed to provide more efficient routes to the east. The canal was built in a narrow window between the time when railroads increased trade enough so that even secondary ports could contemplate such an undertaking and the time when the railroads usurped the lake in many of the carrying trades.

In other instances the landscape simply offered a possibility. Carleton Island, for example, was not the only possible location for Fort Haldimand; Kingston was also an option. Yet, given the perceived needs of the time, Carleton offered the best opportunities in its twin bays, high cliff, overall location, and size. With the end of hostilities and the British coming to see Lake Ontario as a frontier to be settled rather than a thoroughfare, many of the characteristics that made Carleton Island attractive seven years earlier became detractions. Conversely, the aspects of Kingston that worked against it as a wartime port and naval station made it ideal as a hub of colonization, which is not so different from how the French had perceived it. Storrs Harbor followed a similar trajectory. After losing the initial settlement bid to the better-situated Sackets Harbor, it was reevaluated during wartime stress and utilized as a shipyard, beating out other locations such as Henderson Harbor (Gibson 2005). With the return of peace the bay returned to its undeveloped state for several more decades. Thus, changes in perception brought on by new technologies, war, and cultures took advantage of inherent and possible aspects of the landscape, reevaluating the landscape with each shift.

Storrs Harbor also offers a final example of how a single culture can reuse a space for similar purposes but without the re-creation of intent. The military occupied Storrs during the opening and closing decades of the 19th century, yet there is nothing inherently militaristic about the landscape. Those responsible for the second military use may well have been ignorant of the first, and the two events were likely connected more by the particulars of history than some overarching quality of the landscape.

The reuse of Storrs Harbor can be termed “historical myopia” meaning that the historical actors did not have the depth of understanding to perceive their actions as forming part of a pattern. To them it was not a pattern, it was, rather, an original use of a landscape that met their perceived needs and requirements. Historical myopia can be juxtaposed with archaeological hyperopia, in which the archaeologist, looking at actions that span multiple generations, perceives patterns that did not exist for the historical inhabitants. As discussed above, it is the historical people who drove culture and the use of space; an understanding of their lives and culture is paramount in archaeology. There is, nevertheless, also a place for archaeological hyperopia that recognizes patterns that run deeper than the individual. The time-depth and cross-cultural perspective of archaeology allows for human uses of landscapes to be aggregated for the identification of trends that appear to be valid and possibly reflect larger human trends.

Regional Summary

Archaeological hyperopia is useful not only in considering the patterns that cut across the international border and the waterline, such as those discussed above, but for reflecting on the northeastern portion of Lake Ontario as a whole. This is a region that was a major focus, first for the Five Nations Iroquois, Hurons, and Mississaugas, then the French, and then the British. Each of these groups established themselves along the northeast shore and fought the others for control of the lake because it allowed them to access an immense hinterland, first that surrounding the lake itself and eventually the greater interior of North America. For the British and French, the area surrounding the St. Lawrence was particularly important because that river was both the siphon for produce and the lifeline to their North American heartlands and Europe. Controlling access to the St. Lawrence meant controlling the gate to and from the interior, and the necessity of guarding this gate manifested itself in Fort Haldimand, the various forts and settlement of Kingston, and the Rideau Canal. Kingston was not the only place in the landscape to witness repeated reuse by various cultures. During recorded history alone, rendezvous sites became trading posts, harbors, towns, and forts; portage routes became canals; trails became roads and railways; and commodities transitioned from pelts and ash to grains, coal, and ores. These transitions required that the landscape be reworked and re-envisioned in light of available needs and technologies, but the possibilities of the landscape remained largely unchanged and the fundamentals of human anatomy and physics led to similarities of use that spanned centuries. Where the easiest grade and most direct route coincide forms a natural path for not only a trail but a railroad or highway. Similarly, most of the commodities of the region had always been present until their depletion. The landscape changed with human need and ingenuity, both often originating far from the Great Lakes, but the environmental possibilities were largely constant. The most fundamental shift within the lake was not in the routes and commodities but in the priority of routes and commodities. Rail and road eventually replaced lake as the main thoroughfare. Both terrestrial and maritime routes reflected their predecessors, but the ratio of cargo and people moving along these routes shifted during the 19th century. Ferries still connect Kingston and Cape Vincent via Wolfe Island. However, where the Wolfe Island Canal once tried to make this connection as quick as possible and link the region through railroads, it is often faster to travel 70 km by road to cross at the Thousand Islands Bridge than it is to travel 10 km by road and ferry. Even when the overland route is not faster, it is often perceived as more efficient because it allows the traveler to be almost constantly on the move at whatever time desired, instead of waiting at the ferry dock, constrained by the ferry schedule. Additionally, the direction of trade on the lakes changed from a majority of goods coming into the region to support burgeoning communities established at strategic locations to the majority of traffic being extractive and focused on bulk cargos.

The dominance of terrestrial transportation networks has also reinforced the real and perceived differences across the international boundary. Northern New York and southern Ontario initially looked very similar, drawing immigrants of different political dispositions but similar New England agricultural experiences. Through the intervention of the British government, which settled and supported Loyalists in the area, and through natural advantages such as rivers that drained a larger hinterland, the character of the two regions diverged during the 19th century. The manifestations of this divergence in the landscape became more pronounced as the century progressed and the Erie Canal drew settlement away from northern New York at the same time that Canadian westward expansion created port and rail depot cities at places like Toronto and Hamilton. The differences between New York and Ontario can be traced in part to their differences in climate; Ontario is among the southernmost parts of Canada while New York is one of the northernmost states in the U.S. The associated repercussions on agricultural focus certainly influenced variances between the shores of Lake Ontario. This distinction is greater, however, along the western margin of the lake where the climate is milder and the soils are less rocky. This region also benefited from a closer connection with western lands and lakes in much the same way that Chicago and Buffalo benefited along the U.S. shores of the upper Great Lakes. The largest differences between the modern Canadian and U.S. shores of the northeastern portion of Lake Ontario have thus more to do with national character and the period in which each area reached its peak. Kingston is a larger and more vibrant city than either Sackets Harbor or Cape Vincent but retains much of its 19th century character and benefits from institutions such as colleges and prisons established during its commercial heyday. Cape Vincent and Sackets, conversely, were forced from the commercial limelight by the Erie Canal much earlier than Kingston and today exist primarily as residential and tourism nodes.

Finally, nearly all traces of a pan-lake identity have been replaced by modern national identities. Mass media, convenient terrestrial transportation, and improved communication have equalized the dissemination of information across the nations and across the border. Varying political agendas, greater difficulty in crossing the border, and reactions against American neo-imperialism have increased the relevance of the international boundary during the 20th and 21st centuries. Similarly, the greater percentage of non-residents living on and visiting the littoral has increased so that for most residents the lake shore is a second home within the larger nation rather than an interconnected geographic region.

CHAPTER X

CONCLUSIONS: FUTURE RESEARCH AND HUMAN ECOLOGY

> There comes a time in such a study when the past is clear, and the contrasts to the present are understood. (Sauer 1941:14)

Future Research, Statistical Testing

The foregoing has been largely anecdotal. The survey data lent itself to this approach. Rather than finding the same kinds of sites in multiple survey areas, the results included many different types of sites that did not form clear patterns. This data provided ample touchstones for a discussion of the historical development of the Lake Ontario littoral landscape but did not lend itself to statistical analyses and quantitative study. Future research will attempt to address this shortcoming by incorporating previously recorded archaeological data from the Ontario Ministry of Culture and the New York State Office of Parks, Recreation and Historic Preservation.

Specifically, this analysis will utilize a modified predictive model approach, whereby the positions of known sites will be compared to predictor variables, both environmental (e.g., topography, bathymetry, soil types, prevailing winds, proximity to raw materials, etc.) and cultural (e.g., proximity to other sites, cultural preferences drawn from historical literature, visibility, etc.), in order to determine the importance of each variable in the placement of a site type. These data will then be used to address past decision-making priorities, rather than simply to predict where similar sites may be located, as in traditional predictive modeling (Fontana et al. 2000; Lock 2003; Ford 2010). This type of analysis lends itself to a synthesis of Lake Ontario as a maritime system, taking into account the economic, political, and cultural development of the lake and its margins and expanding this study beyond the northeast portion of the lake. This approach draws heavily upon methods proposed by Gaffney and Stančič (1991), but also incorporates methods of Kamermans' (2000) land evaluation approach to analyze data in a deductive framework and to better address hypotheses. Inclusion of cultural variables will make this analysis less environmentally deterministic than most predictive models.

The methods to conduct these analyses need to be further developed, but they will rely heavily on geostatistics, a set of models and tools developed for the analysis of continuous data (Krivoruchko 2000, 2001; Krivoruchko and Gotway 2003) and multivariate statistics (Kvamme 1990; Westcott and Brandon 2000; Lock 2003). Geostatistics will be useful to develop predictor variable datasets and are available through ArcGIS Spatial Analyst, while multivariate statistics will be used to test the correlations between variables and archaeological sites. Multivariate statistics can be calculated using Statistical Package for the Social Sciences (SPSS) and other statistics packages. White's (2002) temporal predictive model methods will also be adapted to this analysis, allowing the cultural periods to be modeled individually before being aggregated and compared. These methods make it easier to determine what the strongest predictors for individual cultures or periods were. For example, in order to test the notion that there were functional drivers for the repeated cross-cultural utilization of specific locations, the major littoral site types for the Iroquois, French, and post-1840 Americans (e.g., portages, forts, harbors, etc.) can be analyzed independently based on cultural and environmental factors such as depth of harbor, breadth-to-length ratio of harbor, orientation of harbor, distance to a navigable stream, navigable distance of stream, and proximity to known contemporaneous sites. The correlation between the sites of each individual period will be tested against the factors using the Kolmogorov-Smirnov test (KS test) (P-value threshold of 0.05). The levels of factor correlation between periods will then be compared and the hypothesis will be accepted if there is a significant correlation between the predictive strengths of similar variables in all periods.

It will also be possible to explore the roles of small ports such as Long Carrying Place through cost surface analysis. In archaeology, cost surface analysis is generally applied to terrestrial landscapes through an analysis of ruggedness, slope, barriers, and related variables (Fitzjohn 2007; Howey 2007). Similar considerations can be applied to a water surface by analyzing prevailing winds, water depth, currents, obstructions, etc.

Harbors where the terrestrial and maritime least-cost surfaces intersect are natural locations for transportation nodes. The coincidence of these predicted nodes and the archaeologically identified nodes will be tested with the KS test. If no significant difference is determined to exist (within a P value of 0.05) between the number of predicted areas with a low cost and the number of low cost areas that contain transportation nodes, then the ease of accessing the harbor was likely the primary consideration in its selection. If there is a significant difference then some other cultural or environmental factor, such as visibility, may have come into play and additional research is warranted.

These two examples illustrate how GIS and statistics can be used to test and explore archaeological hypotheses generated by this research. It is also likely that additional research questions will arise from a visual inspection of the previously recorded littoral sites. The primary thrust of the future research, however, will be to explore the juncture between past human actions and the current environment.

Environmental Archaeology

Much of the present study has focused on human reactions to the environment. Generally the chain of reaction began with the environment, to which humans responded; although in some cases, these responses were to environments that had been modified by previous groups. Humans also elicit reactions from the environment. Humans are not one force and the environment another, two separate systems that bounce off each other; rather, humans are part of the environment. This is an important point because it requires recognition that: 1) the actions of humans, who are not above or outside of nature, can be held to the same ecological standards as those of other fauna, and 2) because environments are always in flux, human changes are neither “unnatural” nor always damaging (Head 2000:8,41). Negative and damaging impacts, however, have become an increasing cause for concern, especially along the shore, where both maritime and terrestrial effects tend to aggregate (Bourne 2006:65; Erlandson and Rick 2008:1; Halpern et al. 2008:949). The level of damage to coasts is exacerbated by the millennia-old tendency of humans to congregate along shores and the tendency of all humans to alter their immediate surroundings to meet their needs. This later propensity existed prior to the Industrial Revolution but has increased dramatically in the past two centuries (Walker 1990:271; Head 2000:16-18; Erlandson and Rick 2008; Rick et al. 2008:94-95).

Such patterns have affected Lake Ontario. Coakley and Lewis (2003:59-60) summarized the current state nicely:

> Now part of an international seaway, Lake Ontario is frequently traversed by both lake freighters and ocean-going vessels. The lake supports commercial fisheries, as well as sport fishing and aquatic recreation. It is also a source of water for drinking, cooling, and manufacturing, a sink for waste and sewage, as well as a habitat for wildlife. These multiple and sometimes conflicting uses have stressed the lacustrine environment and left an anthropogenic imprint.

Much of this human imprint has been generated since rapid urbanization began along the lake shore in the 1940s, and eventually ballooned to a population near 8.2 million today, but concerns about changes in fish species were voiced during the early 19th century and the quality of the lake water was part of the 1909 Boundary Waters Treaty (Johnson 1948:114-115; IGLLB 1974:4; Berkes et al. 1979:1; Coakley and Lewis 2003:78). The principal anthropogenic damaging changes on Lake Ontario have been to water and sediment quality, erosion, and fish populations.

Water and Sediment Quality

Pollutants have come to Lake Ontario from materials dumped into the lake and its feeder streams, as well as through atmospheric pollution that rains or settles onto the lake surface where it is absorbed. The majority of these pollutants have aggregated along the shore, in particular near urbanized areas, such as Hamilton, Toronto, and Port Hope, but also in the Bay of Quinte. Although polluted water has drawn much of the attention, another major concern is sediments containing nearly all of the same pollutants, which are not regularly flushed by lake movement. Lake movement, which helps flush contaminated waters, brings other problems because Lake Ontario is at the end of the Great Lakes chain and often collects pollutants from the other lakes (Berkes et al. 1979:31; NHWG 1995:2-11; Lewis et al. 2000:6; Coakley and Lewis 2003:83,89). Many of these contaminants, including polychlorinated biphenyls (PCBs), mercury, salts, heptachlor, dioxin, epoxide, and dichloro-diphenyl-trichloroethane (DDT) resulted from increased population and industrialization along the lake shore during the 20th century (NHWG 1995:2-9-2-10; Crowder et al. 1996:127; Lewis et al. 2000:6). Similarly, the eutrophication (a massive increase in algae and plant life that removes substantial amounts of oxygen from a body of water, resulting in the suffocation of aquatic fauna), was caused by the super-fertilization of the lake through sewage and modern agricultural runoff (G/FLRPB 1972:2; Lewis et al. 2000:6).

However, not all of these problems are of strictly recent origins. Lake Ontario sediments carry evidence of historically increased lake eutrophication and industrial waste accumulation dating to the early to mid 1800s that can be linked directly to widespread European settlement, deforestation, and the fluorescence of mixed farming and animal husbandry in the region (Coakley and Lewis 2003:78). Prior to the work of George Perkins Marsh (2003 [1864]), the closest that most mid-19th century people came to conjecturing about the impacts of their actions on the environment was to wonder if clearing land would affect the climate; those who thought that there would be an impact often believed that the result would be a drier and warmer climate (Wood 2000:158). Examples of this indifference and its impact on water quality include the emptying of tanneries directly into both U.S. and Canadian feeder streams and the ejection of ash and clinker as a hot slurry from steamboats (NYSOPRHP site number 11714.000022; Plumbe 1997; Lewis et al. 2000:7-8).

Despite the number and severity of these historic and modern effects, the quality of Lake Ontario water and sediments have steadily improved since they came to widespread regional attention during the 1970s. Today, nearly all water contaminants, as well as bacteria and phytoplankton, are at or below nationally mandated levels (NHWG

1995:2-9-2-10; Millard et al. 2003:123,128). Sediment quality is also slowly improving (Coakley and Lewis 2003:89).

Erosion

The effects of erosion on the Lake Ontario littoral are twofold. It causes the loss of sediments and soils from the terrestrial portion of the shore, and it leads to the accumulation of these sediments in the lacustrine portion of the shore. Both of these effects result from the removal of trees and groundcover in exchange for agricultural fields. This removal has had far-reaching consequences such as more rapid runoff that causes higher and more frequent floods, seasonal drying of headwaters because of the lack of woodland to hold water in the soil, and the lowering of underground aquifers. All of these impacts have drastically affected local soils to the point that that the original surveyors' accounts do not coincide well with modern soil surveys (Wood 2000:16).

From the perspective of the shore, however, the principal result of erosion is the movement of sediments from terrestrial deposits to the lake and its feeder streams. This movement, combined with the tendency of humans to attempt to harness streams with dams, leads to larger problems. Dams tend to accumulate sediments and debris, which ultimately leads to their failure, which in turn causes a freshet that increases erosion downstream (Inman 1978:2269; Savage 1997). Much of this eroded sediment eventually reaches Lake Ontario, where it disrupts the delicate balance between sediment supply and beach erosion that typifies most shorelines. As a result, some areas become inundated with sediment, while others are starved and witness large-scale erosion. Often the human response to these shifts in shore stability is to build structures that direct or trap sediments. These structures often exacerbate the problem by starving one region for the benefit of another. Eventually, the shore will reach equilibrium around the new structure, but humans often build a second structure down current of the first to trap sediment in the starved area, and then a third, fourth, etc., stretching the starved region far down the shore (Inman 1978:2265,2271).

Muskellunge Bay near Storrs Point demonstrates many of the repercussions of agricultural erosion. There were fields on the shores of the bay as early as the 1830s (Stockton 1836), resulting in noticeable changes in the shape of the bay. Even without taking for granted errors in 19th-century cartography, the bay shrank noticeably between 1829 and 1944 (Vinton 1829; Stockton 1836; Stone 1864; Robinson 1888; USGS 1944; Fontana et al. 2000:101). The accumulation of these sediments, as well as sediment being transported by the Black River, likely necessitated the construction of the training walls at the mouth of the Black River to maintain a usable channel to Dexter. The walls served their purpose, confining the river current to remove sediments within the channel, but they also resulted in the accumulation of sediments on their out-channel sides. These sediments have completely altered the shape of the surrounding shore, so that formerly identifiable features, such as Eckford Island, are no longer distinct (Stockton 1836).

The sediment starvation of other areas results in an increase in the natural tendency for portions of the shore to calve off and for the shore to recede. Several factors, including weather and ice, influence the process, but it is exacerbated in areas that are not receiving sufficient sediments to rebuild protective beaches. In some regions shore recession is non-existent, but in others it is noticeable during the course of a lifetime. It can even be catastrophic, with the loss of several meters in a single year. This recession has destroyed houses, roads, and archaeological sites (Konrads 1963:3-7; Howard 1987). The problem of shore recession and overall erosion will likely continue or worsen in the future. Recent environmental change models suggest that weather worldwide will become more violent, with an increased frequency of torrential rains, which will in turn increase the rate of erosion (Annin 2006:48).

Fish Populations and Fish Habitat

Lake Ontario produces fish yields far lower than expected largely because major fish species that were indigenous to the lake have become extinct or severely declined during the 20th century as a result of overfishing, pollution, invasive species, and habitat destruction. These species include Atlantic salmon (*Salmo salar*), lake trout (*Salvelinus* *namaycush*), lake whitefish (*Coregonus clupeaformis*), ciscos (*Coregonus artedii*), and blue pike (*Sander vitreus glaucus*) (Berkes et al. 1979:25; Leach 2003:xvii).

The effect of Native American consumption of the fish population is unknown, but it is possible that they suppressed many of the populations so that the lake was not at full carrying capacity during the late pre-contact period. As high human mortality rates brought on by disease preceding major European contact reduced the pressure on fish resources, fish populations may have rebounded, leading to the perception that the Great Lakes, and the New World in general, were particularly rich (Rick et al. 2008:90). This perception and the large annual runs of fish led to the taking of massive numbers of fish during the historic period, such as the seining for cisco in the Chaumont Bay area. It also led to wasteful behaviors, such as allowing fish to spoil while waiting for a better price. Improved methods of fishing continued to put increasing pressure on the lake populations and effectively unbalanced the food web through the removal of higher-order predators by the mid-20th century (Crowder et al. 1996:131).

Invasive species filled the resulting empty niches and out-competed some remaining native species in many others. The first recorded invasive species in this long stream was the sea lamprey (*Petromyzon marinus*), introduced in 1830. Since then at least 60 nonindigenous species have been introduced to Lake Ontario through deliberate or accidental introduction, through canals, in ballast water, and as bait release. The rate of introduction peaked in the 1870s and again in the 1950s with the opening of the St. Lawrence Seaway. Since regulation began in the 1980s, the rate of introduction has slowed but continues (Duggan et al. 2003:542,546-547). Some invasive species, such as the sea lamprey, preyed on indigenous fish and reduced their numbers directly. In many other cases, these new species were similarly, but better, adapted to the Lake Ontario environment than native species and out-competed the latter. In some instances, the new species also benefited from unintended human changes to the lake. For example, many of the exotics that have flourished in Lake Ontario are salt-tolerant, providing them with an advantage as increasing amounts of road salt washed into the lake beginning in 1910 (Crowder et al. 1996:127). Other pollutants also caused fish die-offs, so to paraphrase one mid-20th century fisherman, floating condoms had replaced *Coregonus clupeaformis* as the lake whitefish (Gateley 1998:60).

Changing habitats brought on by deforestation and agriculture have also greatly affected many indigenous species. Deforestation probably caused an increase in stream temperatures around Lake Ontario as early as the 1830s. This temperature shift likely caused a decline in salmon spawning success, led to a decline in the alewife population, and increased the spawning success of sea lamprey. A similar scenario has played out around the lake, as urbanization has increased in the average shore water temperature, to the benefit of warm-water species (Crowder et al. 1996:129). The removal of timber also resulted in an increase in the number of sawmills, nearly all of which dumped their sawdust and debris into adjacent streams. This dust clogged the streams and coated spawning grounds, which, along with the dams needed to create mill ponds, had a negative impact on several species (Wood 2000:17). Increased sediment loads reduces the amount of light available for the base of the food chain, but changes in the rate of sedimentation also has an impact on fish habitats. Different fish communities prefer different sediment types. Changes in sedimentation can cause changes in the amount of habitat available for different species (Crowder et al. 1996:126; SMWG 1996:15). In addition to altering the accumulation of sediments, humans have affected fish species through the removal of stone. Headlands were historically important fisheries because the boulders that they contained were reproduction habitats for whitefish and lake trout. Massive amounts of stone were removed from these areas by stone-hookers during the 19th century to procure building material for harbor and wharf construction. Not only did this practice destroy spawning grounds, it also caused more erosion by removing stones that helped to dissipate wave energy and armor the shore. Partially as a result of stone-hooking, Bonnie Brae Point near Oshawa, Ontario has eroded back 150 m since 1900 (Inman 1978:2269; OCMA 1985; Anonymous 1993; WRT 1995:2-7).

The Environment is Interconnected

The relationship between stone-hooking, erosion, and fish habitat, and the connection between pollutants such as salt and invasive species, clearly demonstrate the interrelated nature of human changes to the Lake Ontario environment. Douglas Inman's (1978:2266) analysis of the biblical Israeli harbor of Caesarea provides an even more far-reaching example. Completed in 10 B.C., the harbor breakwater interrupted the littoral drift of sediments resulting in an extensive accretion of sands to the south and erosion to the north. The erosion destroyed part of an aqueduct while the accretion created dunes that eventually were blown inland and covered portions of the city.

Given the complexity of the shore environment, the multiple repercussions of any single human action, the multitude of human actions that take place along a shore during a single year, and the length of time that nature requires to reach an equilibrium, it is remarkably difficult to determine which conditions are cultural and which are natural (McGillivray 1988:1; Walker 1990; Bourne 2006:67; Halpern et al. 2008:951). This point reinforces the benefit of considering humans as part of the ecosystem, so that the distinction between natural and cultural effects is less important than the severity of the effect. It also suggests that the time-depth inherent in archaeology may be helpful in addressing changes to the environment.

Potential Archaeological Contributions to Human Ecology.

There are two reasons for archaeologists to be concerned about changes to the environment: 1) the loss of archaeological resources and 2) a desire to contribute to a scientific base of knowledge for understanding interactions between humans and the environment.

All things being equal, if a coast or shore is allowed to erode in one place, it will rebuild in different place so that the total shore is conserved. This logic, however, does not work for cultural resources, which lose their context when they erode out of a shore (Chang 2006; O'Sullivan and Breen 2007:243). Coastal erosion is a culturally destructive natural process. Many of these natural processes have been exacerbated in recent years by human actions, so that rising sea levels and more violent storms have increased the rates of erosion worldwide. Consequently, archaeologists have become ever more concerned about the effects of erosion and with recording littoral and coastal sites before they are destroyed. In some cases it is possible to slow the rate of erosion or move an historic structure farther from the shore, but for much of archaeology the most tractable option is a managed retreat (Storck 2004:217-218; Chang 2006; Paddenberg and Hession 2008:151).

With archaeological shore sites being under-recorded, it is difficult to understand the impacts of coastal and littoral erosion and there is no clear idea of what is being lost through these processes. English Heritage has been on the forefront of managing coastal archaeology and has developed a system of “rapid coastal zone assessment surveys” to determine the nature, distribution, and significance of the archaeological resources along the English coasts. Based on the results of these surveys they are able to create an “index of risk prioritization” that allows the most significant and most threatened sites to receive the most attention and funding (Fulford et al. 1997; Murphy 2006; Paddenberg and Hession 2008). Such an index minimizes the amount of archaeological data that is lost and makes possible informed decisions about what to preserve, what to excavate, and what to abandon.

With the realization that shore erosion has increased in recent decades because of far-reaching anthropogenic changes to the environment, archaeologists have also begun to focus on broader human alterations to the environment through a human ecology approach (Van der Noort and O'Sullivan 2006:31). The difficulty is that there is very little good ecological data prior to the 20th century, and most ecological studies span little more than a few decades. Consequently, most data begin well after humans had begun to drastically affect the environment, and much of the data lacks a deep time dimension. Several archaeologists and historians have stepped into this void. Much of the archaeological data is drawn from shell midden sites and analyzes changes in animal size and species representation as a result of human predation (Head 2000; Reitz 2004; Erlandson and Fitzpatrick 2006:18; McErlean 2007:92; Rick and Erlandson 2008). There is also a growing literature of historical ecology that draws on archival research (Starkey et al. 2008) and serves as a bridge between the archaeological data and the growing corpus of research on coastal, marine, and global environmental change (Pauly et al. 1998; Steffen et al. 2004; Halpern et al. 2008).

One of the long-term goals of the Lake Ontario Maritime Cultural Landscape Project is to contribute to the larger interdisciplinary field of global change science by providing the time-depth that other specialists require to more effectively address pressing environmental concerns. In particular, the objective is to address larger landscape changes in an attempt to correlate past activities, both single actions and long-term patterns, with current conditions in much the same way as has been done with historic fishing (Reitz 2004; Rick and Erlandson 2008). This research is part of archaeology's responsibility to reciprocate with the community not only through increased education and heritage studies but also through information that address current concerns such as sustainability (Minnis 2006).

Correlating past actions with current conditions in a meaningful way will take significantly more research and will likely be a combination of focused interdisciplinary field-testing, data mining, and GIS analysis. The first step in this process will be to establish whether or not there is a significant relationship between degraded environments and human activity in the landscape. This relationship can be explored by comparing the mean value for degraded environment factors (e.g., erosion, siltation, fish habitat, etc. as ordinal variables) in the vicinity of archaeological sites (defined by a GIS buffer function) to the mean values for the region (defined by town boundaries) through the KS test (P-value threshold of 0.05). A Spearman's rank correlation will then be used to explore the strength of any significant associations found to exist between environmental variables and archaeological sites. Appropriate archaeological and ecological questions and methods will then be developed for the sites that demonstrate a significant correlation.

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APPENDIX A
GAZETTEER OF ARCHAEOLOGICAL FINDINGS

Introduction

The archaeological findings are grouped by survey area. A table and map at the beginning of each section summarize the findings for each survey area (Figures A-1, A-3, A-9, A-14, A-35, A-58, A-66 and Tables A-1, A-2, A-3, A-4, A-5, A-7, A-8). Each site or artifact is then described in paragraph format, supplemented with technical drawings and photographs.

Wilson Bay (Area 1)

Foundation

A foundation was reported by informants (Alan and Kathy Karenka) but archaeologists were unable to substantiate the claim.

Watering Hole

A "watering hole" was reported by informants (Alan and Kathy Karenka) but archaeologists were unable to substantiate the claim.

Dock Remains

Approximately eight pins, both solid and hollow, were noted drilled into the bedrock ledge on the south shore of Wilson Bay. The pins are arranged in three groups that form an east-west line. The pins project approximately 25 cm above the bedrock and are 4 cm in diameter.

Boathouse Foundation

A small (approximately 10 m square) rubble projection extends from the south shore of Wilson Bay. This projection was described as a "boathouse foundation" by informants (Alan and Kathy Karenka) and may be the base of such a structure.

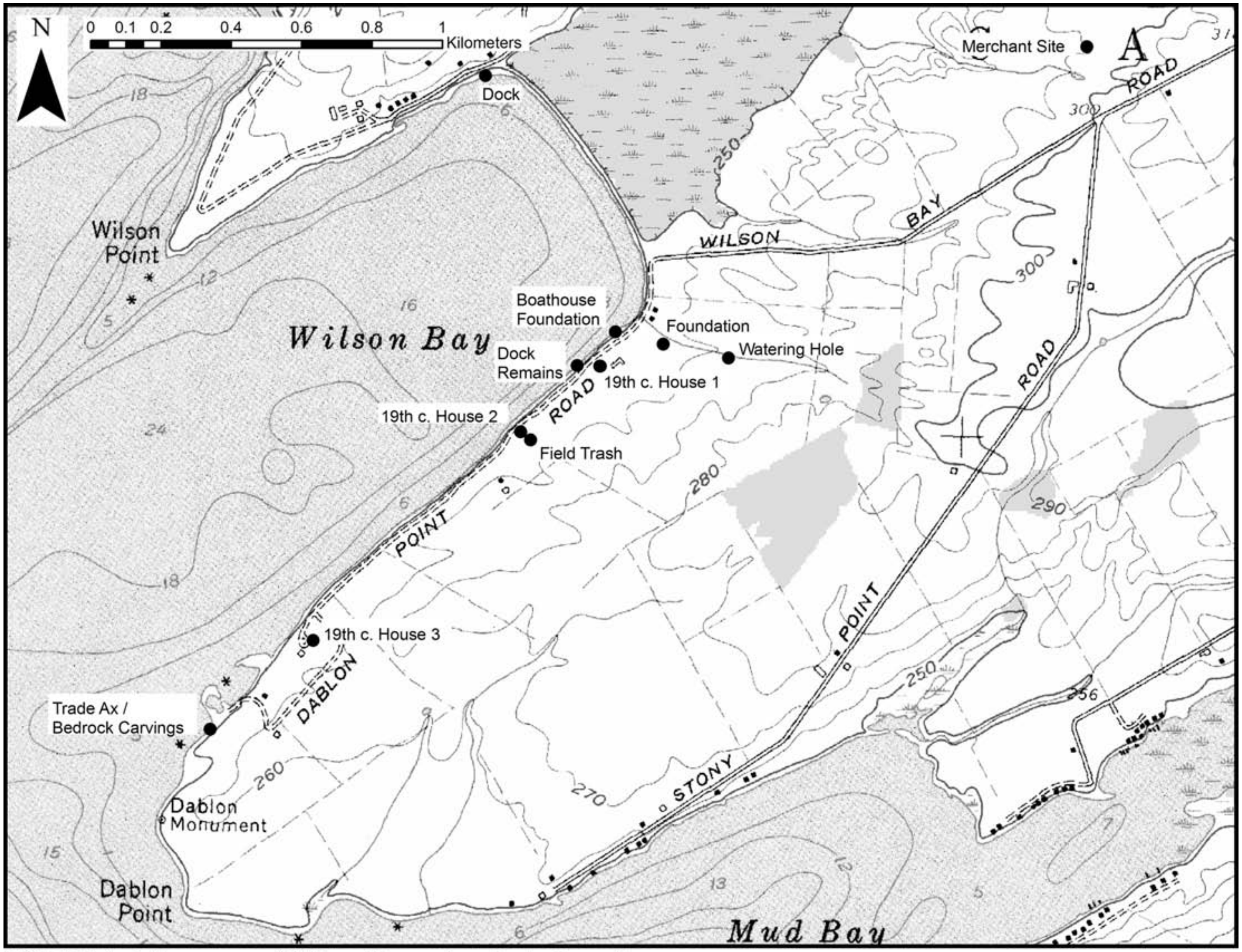

FIGURE A-1. Summary of Wilson Bay archaeological results.

TABLE A-1
SUMMARY OF WILSON BAY ARCHAEOLOGICAL RESULTS

Site	Easting	Northing	Method	Date	Type
Foundation	392393	4882213	Informant Interview	19th c.	Agricultural
Watering Hole	392388	4882254	Informant Interview	19th c.	Agricultural
Dock Remains	392154	4882203	Informant Interview	19th c.	Recreational
Boathouse Foundation	392266	4882300	Informant Interview	Unknown	Recreational
19th c. Houses	various	various	Informant Interview	19th c.	Domestic
Field trash	392021	4881984	Informant Interview	19th c.	Domestic/ Agricultural
Bedrock Carvings	391110	4881170	Informant Interview	Unknown	Unknown
Trade Ax	391110	4881170	Informant Interview	Unknown	Unknown
Dock	391889	4883028	Informant Interview	Unknown	Dock
Merchant Site	393600	4883110	Informant Interview	Pre-Contact	Unknown

Mid-19th Century Houses

Three mid-19th century houses are situated along the south shore of Wilson Bay. The easternmost house (Karenka) and center house (Uhlig) are both constructed of limestone, two stories tall, and were built in 1830 and 1839, respectively. The westernmost house (Missionaries of Sacred Heart) was constructed prior to 1864 and is a frame structure.

Field Trash

The owners of the center 19th century house (Uhlig) reported finding transfer-printed ceramics, “medicine” bottles (likely molded panel bottles), and abandoned farm equipment in their gardens (immediately southeast of the house) and on the surrounding property. These findings are consistent with field trash deposited during the use of the property as a farm.

Bedrock Carvings

An informant (Herman Hetzler) reported English inscriptions on the bedrock shore of Dablon Point. High water prevented archaeologists from substantiating this claim.

Trade Ax

An informant (Herman Hetzler) reported recovering a French-style trade ax head near the waterline of Dablon Point. The ax head measures 15 cm long with an 8 cm wide blade and 4.5 cm wide poll. The ax is formed of a folded piece of wrought iron approximately 0.6 cm thick. The inside of the eye measures 3.5 x 5 cm.

Dock

The dock is situated at the northeast corner of Wilson Bay. It is constructed of two parallel, L-shaped lines of stone (Figure A-2). The main leg of the dock extends approximately 25 m from shore; the perpendicular leg is roughly 14 m long and runs east from the main leg. Each line of stone is approximately 2.5 m wide and the entire structure is 9.5 m wide.

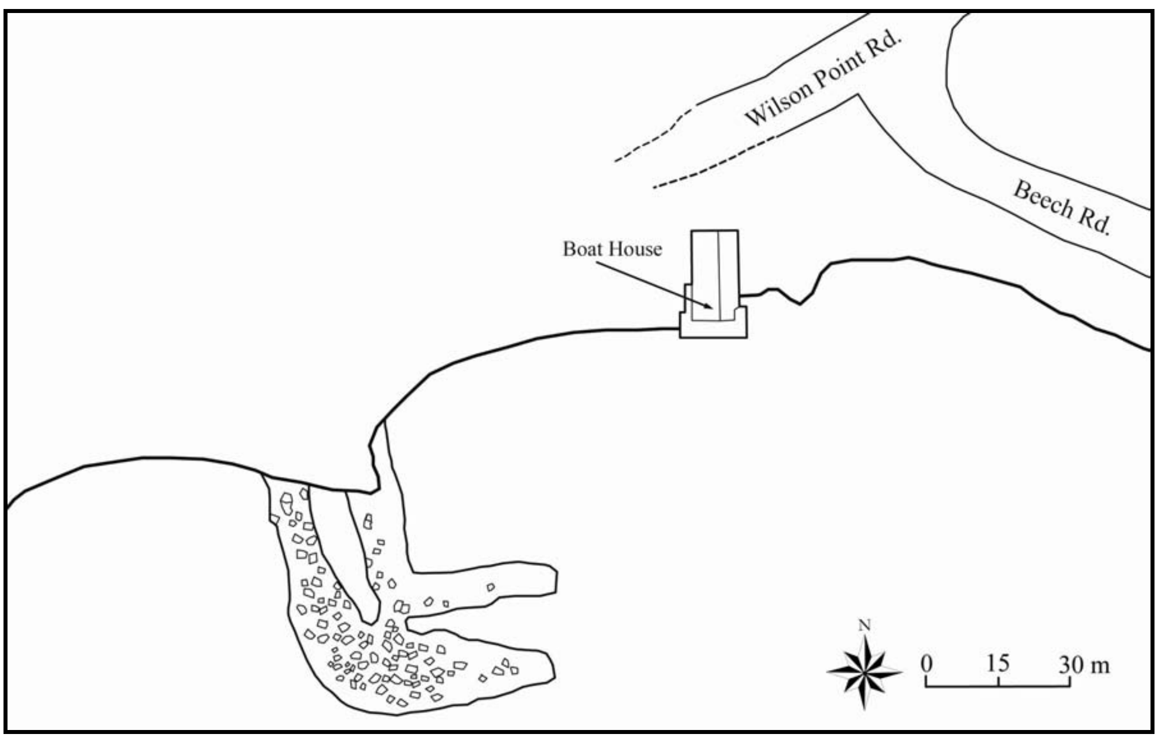

FIGURE A-2. Wilson Bay dock.

Merchant Site

An informant (Jerry Merchant) reported that the fields east of Wilson Bay contain Native American artifacts and that the heaviest concentration (Merchant site) is near the intersection of Merchant Road and Stony Point Road. These artifacts are no longer in the possession of the informant and were unavailable for review.

TABLE A-2
SUMMARY OF LONG CARRYING PLACE ARCHAEOLOGICAL RESULTS

Site	Easting	Northing	Method	Date	Type
Log Cabin	398449	4878278	Informant Interview	19th c.	Domestic
Haydock	398279	4878473	Visible ruin	pre-1885	Commercial
Barn	398287	4878495	Visible ruin	pre-1885	Commercial
Boatyard	398238	4878487	Archival Research	late 19th c.	Industrial
Becker House	398240	4878526	Standing structure	ca. 1850	Domestic
Blacksmith Shop	397864	4878508	Standing structure	ca. 1850	Commercial
Lumber Stick	398531	4878177	Side-Scan Sonar	Unknown	Industrial
Northrop Site	398392	4878571	Archival Research	Middle Woodland	Burial
Crouse Site	397733	4878485	Informant Interview	Unknown	Unknown
Sword	unknown	unknown	Informant Interview	1850	Military
Garney Barr Site	402744	4875695	Private Collection	Pre-Contact	Domestic
Fish Weir	392484	4878163	Informant Interview	Unknown	Fishing

Long Carrying Place (Area 2)

Northrop Site

The Northrop site is situated near the crest of the hill north of Long Carrying Place in the vicinity of Point Peninsula Road/County Route 57. The original find consisted of a Point Peninsula (Middle Woodland period) stone-lined burial pit. The pit, which measured approximately 2.4 m long, 1.8 m wide and 1.2 m deep, was capped with large slabs of stone. The grave contained between 8 and 17 individuals, some of whom had evidence of head trauma that likely caused their deaths (Ritchie 1944:73). The collection has been lost and/or dispersed and was not available for inspection.

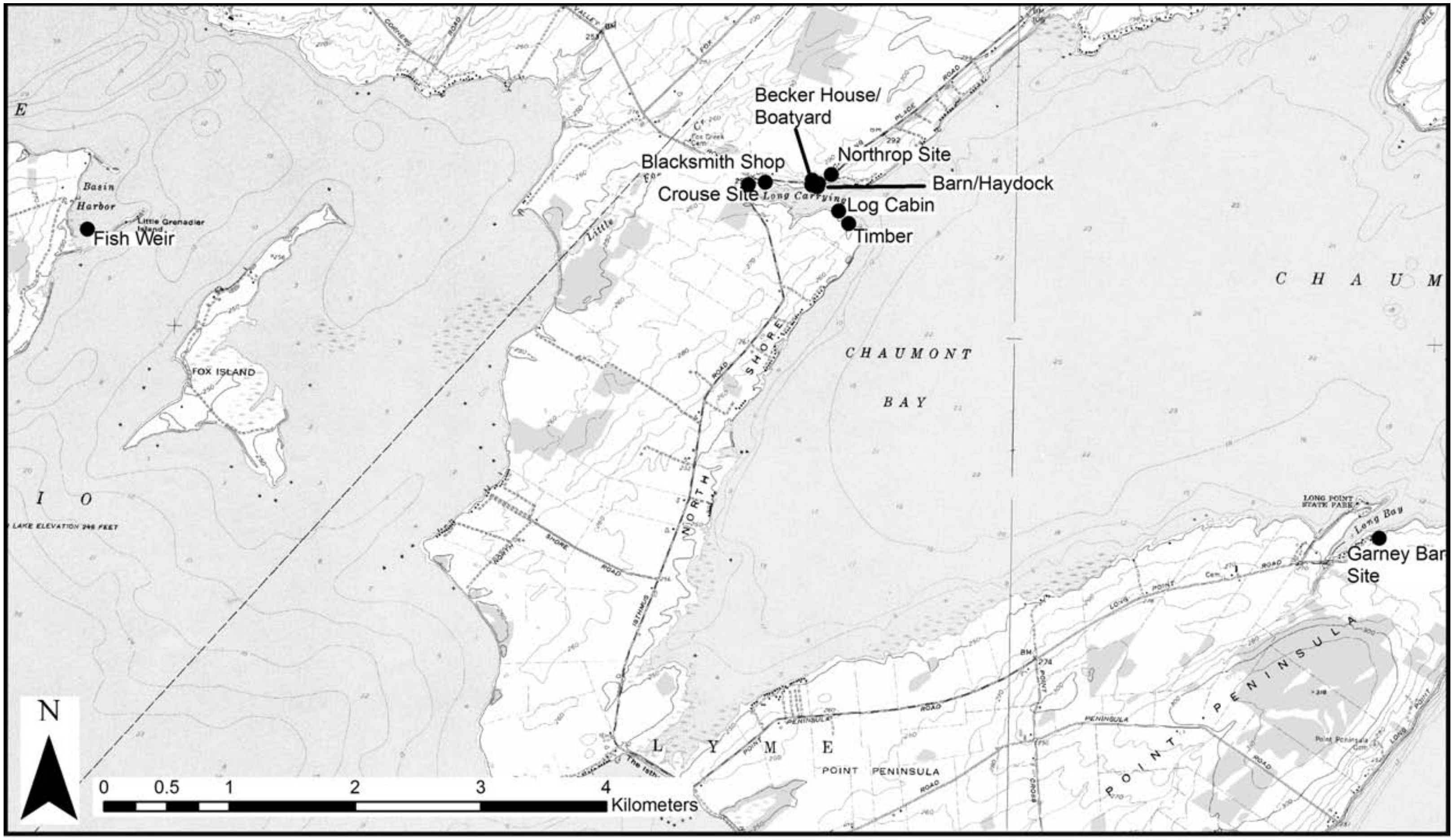

FIGURE A-3. Summary of Long Carrying Place archaeological results.

Crouse Collection

The Crouse family reported collecting a substantial number of Native American artifacts around the back of Long Carrying Place over the past two generations. The informant (Allen Crouse) stated that the collection had been donated to the "Watertown Museum" but a review of the Jefferson County Historical Society collections (located in Watertown) failed to identify the collection.

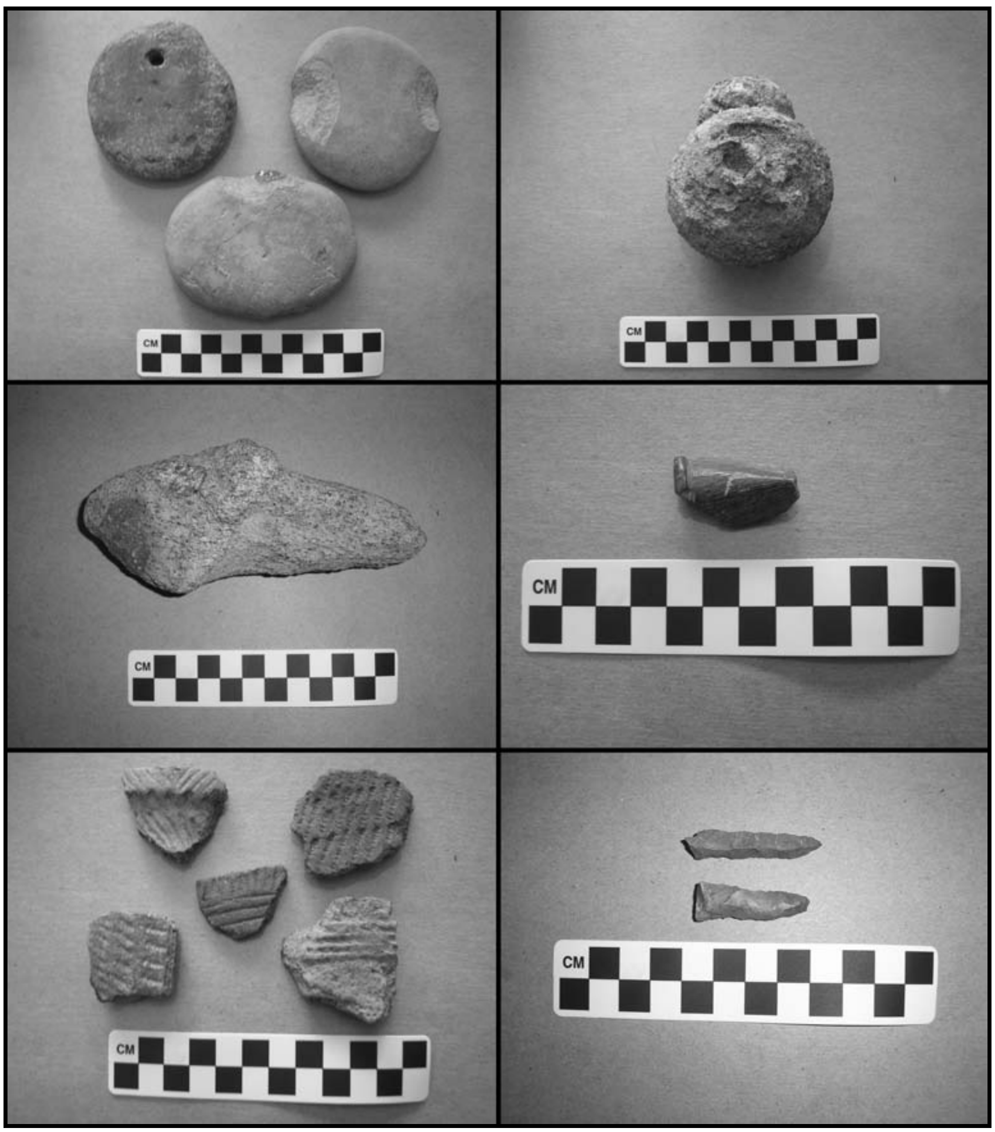

FIGURE A-4. Representative artifacts from the Garney Barr Collection, Point Peninsula.

Garney Barr Collection

Garney Barr owns a wide array of artifacts collected during a lifetime of working the fields across Long Bay from Long Point State Park Long Bay. Barr reported two distinct find areas, a “village site” near the south shore of Long Bay and an approximately 7-m high “burial mound” just south of the “village site.” Artifacts in the collection include celts, net weights (both globular and flat varieties), incised and impressed Native American ceramics, stone drills or awls, and a stone pipe bowl fragment (Figure A-4). The collection also includes projectile points dating to the Late Archaic through Middle Woodland periods (Figure A-5). Furthermore, a bone utensil handle (possibly mid-18th century, Hume 1991:182) and clay pipe fragments that likely date from the late 18th through mid-19th centuries are included in the collection (Hume 1991:303) (Figure A-6).

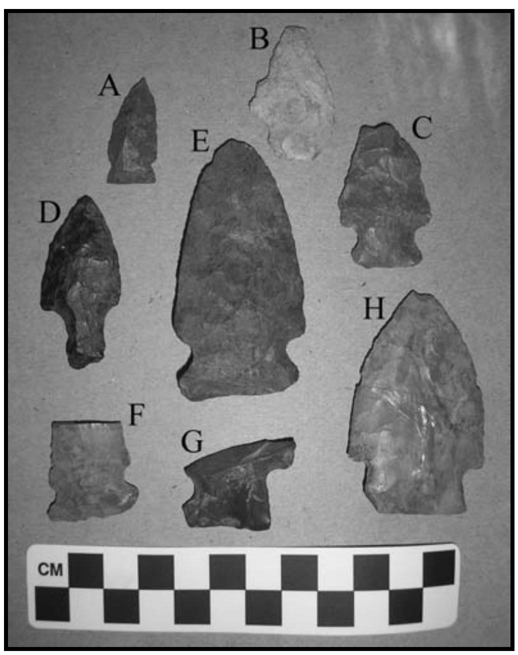

FIGURE A-5. Projectile points from the Garney Barr Collection, Point Peninsula. A: Lamoka, B: Snook Kill-like, C: Brewerton Side-Notched, D: Bare Island Like, E: Brewerton Side-Notched-like, F: Meadowood, G: unidentified, H: Jack’s Reef Corner-Notched or Vosburg.

FIGURE A-6. Clay pipe bowls from the Garney Barr Collection, Point Peninsula.

Fish Weir

A scuba diver informant (Gary Gavurnik) reported a “fish weir” within Basin Harbor on Grenadier Island. The “weir” is constructed of five to six 15-cm diameter posts projecting approximately 1.8 m above the sediment and situated in 3.7 m of water. It is difficult to determine how these posts would have functioned as a fish weir; however, given Basin Harbor’s active use as an anchorage, these may be mooring posts or the remains of a lightly built dock. The posts were not inspected by an archaeologist.

Log Cabin

An informant (Norman Otis) reported that a log cabin foundation was located in the copse of trees behind his house until the mid-1990s, when he cleared the remains. At the time of its demolition, the foundation was approximately three logs high. The presence of this foundation was independently substantiated by a second informant (Daniel Lashway).

Timber Stick

A 5.5 m long stick of timber was recorded along the south shore and near the

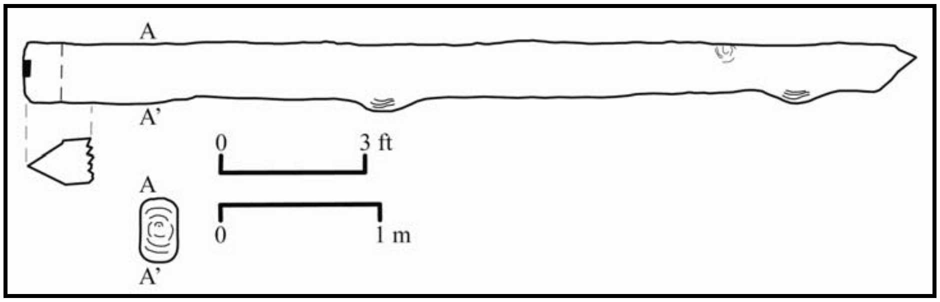

FIGURE A-7. Timber stick, Long Carrying Place.

mouth of the Long Carrying Place (Figure A-7). The stick is roughly rectangular in section and measured 31 x 25 cm. The ends are wedge shaped but set at right angles to each other. The stick may have been generated by small-scale logging that took place on Cherry Island.

Sword

An informant (Dan Lashway) reported finding an 1850 model foot officer’s sword (although it may also be an 1850 model mounted officer’s sword) sticking hilt-up in a field north of Long Carrying Place. The exact location was unclear from his description and he was unable to identify the location on a topographic map.

Blacksmith Shop

The blacksmith shop is an approximately 12 x 8 m structure with its long axis oriented east-west. The main block of the structure is a one-and-a-half-story building with a north-south oriented gable roof. There is a small window under the gable and a large opening through both walls of the first-story ends, as well as a single window on the west side. Attached to the east side of this structure is a one-story lean-to with a window on the east side. Both portions of the structure are clad in asphalt shingles and have tin roofs. The main block has an undecorated cornice on the gable ends; the lean-to has no cornice. The main structure has a distinct lean to the east and contains a Volkswagen Beetle.

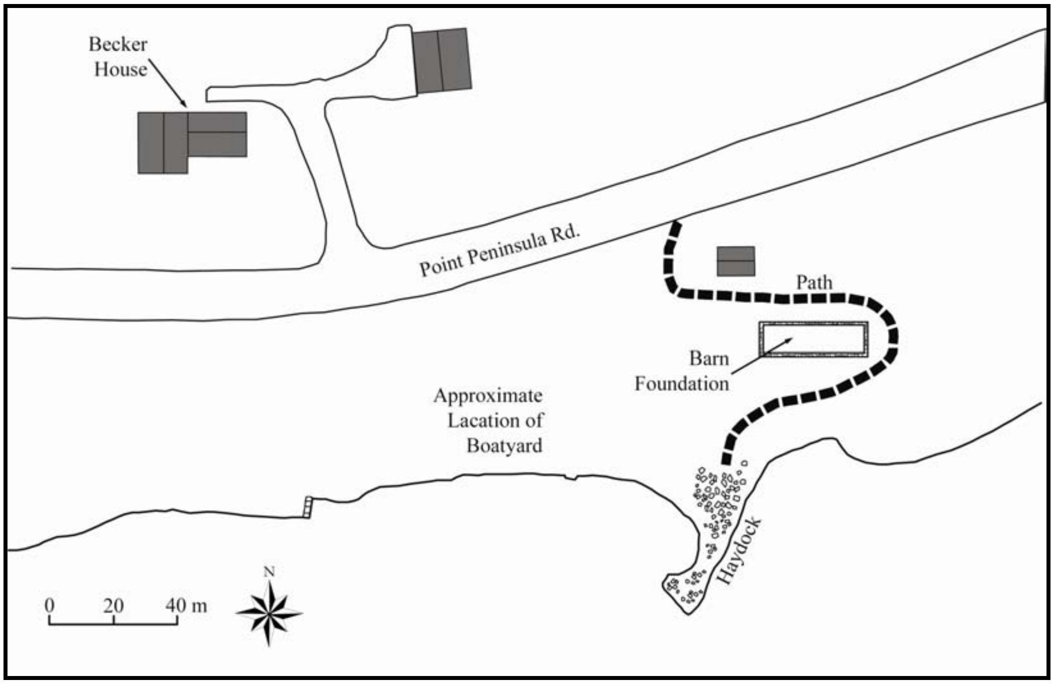

FIGURE A-8. Relationship between the Becker House, haydock, barn, and boatyard, Long Carrying Place.

Becker (Barttells) House

The Becker house is a clapboard building situated on the north side of Point Peninsula Road (Figure A-8). The original house is intact, although the cooper shop has been removed and a later addition is attached to the east side of the building. A swimming pool and outbuilding are also 20th century additions.

Haydock

The haydock is approximately 26 m long, but due to its westerly curve it extends only 24 m into Long Carrying Place. The dock is constructed of rubble and is approximately 15 m wide at the shore and 5 m wide at its end. It stands roughly 0.5 m above the water. A sweeping path approaches the haydock from Point Peninsula Road. The path begins near the guardrail, comes wide around the barn foundation, and then runs parallel to shore for approximately 35 m, to reach the foot of the haydock. This path goes around the steepest shore slope; its grade is approximately 5°, while the average slope in vicinity is approximately 8°.

Barn Foundation

The barn foundation is a 27.4 x 9.1 m rough stone foundation oriented east-west. A stone carved with the date 1885 was reportedly recovered from the barn foundation by the current owner (Becker).

Boatyard

The boatyard is not indicated on contemporary maps; however, there is evidence of slope modification through grading and construction of a retaining wall immediately west of the haydock. This area is a logical location for the boatyard. Beginning at the waterline the following slopes were recorded for this area:

At waterline = 8°

5 m from waterline = 10°

10 m from waterline = 8°

15 m from waterline = 8°

20 m from waterline = 6°

25 m from waterline = 12°

30 m from waterline = 6°

TABLE A-3
SUMMARY OF SHERWINS BAY ARCHAEOLOGICAL RESULTS

Site	Easting	Northing	Method	Date	Type
Weaver House	406150	4869059	Standing Structure	mid 19th c.	Domestic
Haydock	406060	4869219	Visible Ruin	19th c.	Commercial
Timber	405822	4868602	Informant Interview	Unknown	Unknown
Timber (3-16)	406000	4869252	Side-Scan Sonar	20th c.	Unknown
Steel Pipe	405847	4869104	Magnetometer	20th c.	Unknown
Cast Iron Fragment	405303	4868595	Side-Scan Sonar	20th c.	Unknown

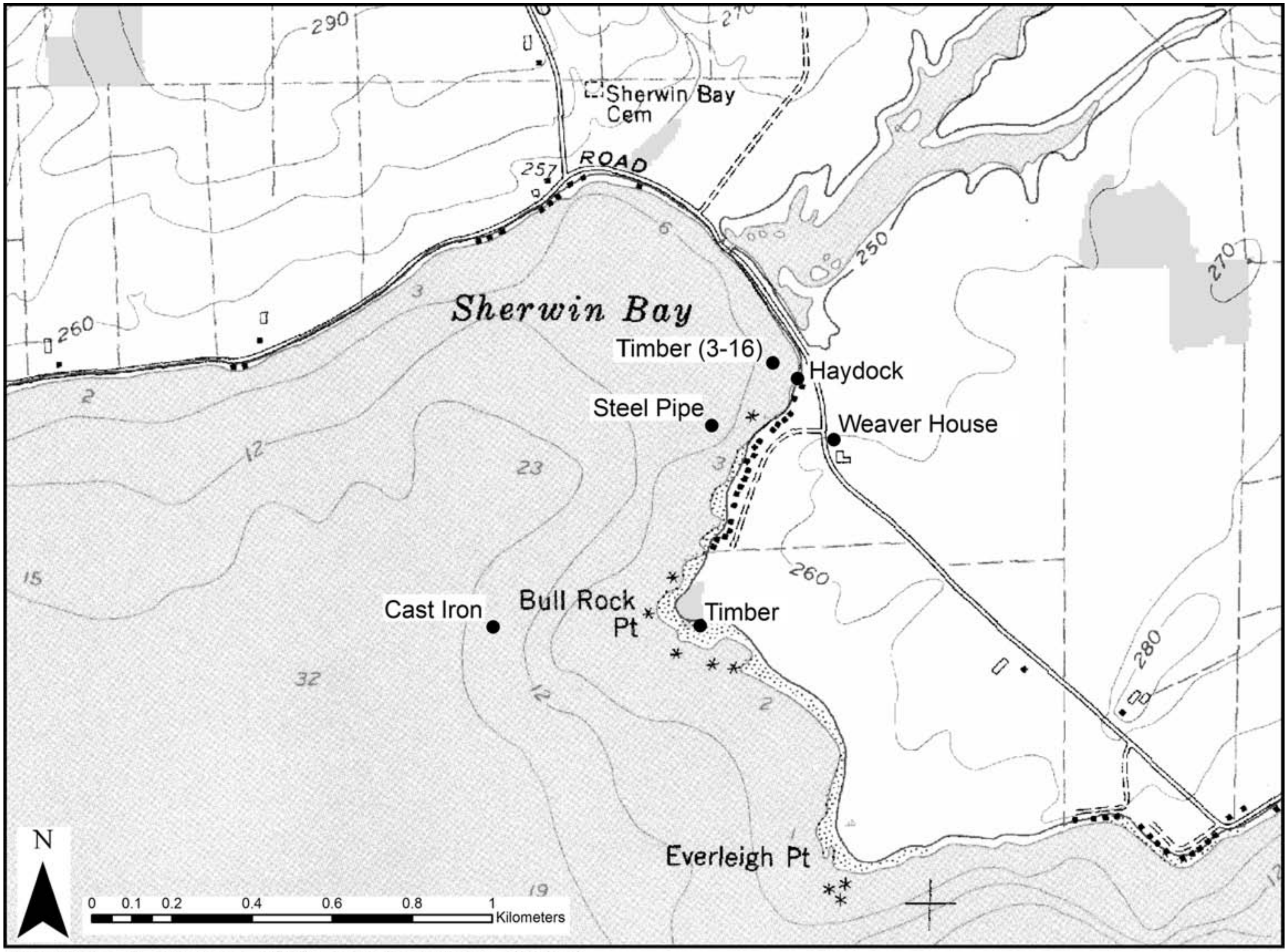

FIGURE A-9. Summary of Sherwins Bay archaeological

Sherwins Bay (Area 3)

Weaver House

The Weaver house is an Italianate (ca. 1840-1885) two-story building (Figure A-10). The main building has a low hipped roof, while the one story addition to the rear (east) has a gable roof. Both roofs are metal and both portions of the building are clad in clapboards with stone foundations. The main building is 10 x 7.8 m; the addition is 7.4 x 7.8 m. The main building is a three-by-two bay house with an off-center door on the west (front) side and a projecting anteroom entrance on the south side.

Steel Pipe

A 60 cm section of 5 cm diameter steel pipe was identified with the magnetometer. The pipe was not in situ.

Timber

An approximately 4-m long, 36-cm diameter timber was noted on the shore of Bull Rock Point. The timber was likely deposited there by ice. One end of the timber is mortised and contains a treenail (Figure A-11). The timber may have been part of a wharf or dock.

Timber (target 3-16)

An approximately 2.6-m long, 16.5 x 11.4 cm rectangular timber was identified with the side-scan sonar near the back of Sherwin Bay (Figure A-12). The presence of a wire spike and 1.4-m long rebar reinforcement bar suggest that the timber is likely a portion of a relatively recent dock.

Cast Iron Pipe

A 25.4 cm long fragment of 10.2-cm diameter cast iron pipe was identified near the back of Sherwins Bay. The pipe is not in situ.

FIGURE A-10. Weaver House, Sherwin Bay. View towards the northeast.

FIGURE A-11. Detail of timber located on shore of Sherwin Bay.

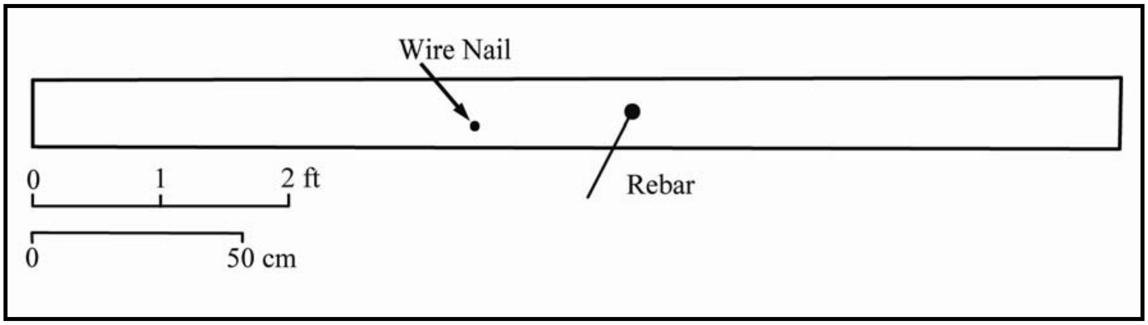

FIGURE A-12. Timber (target 3-16), Sherwins Bay.

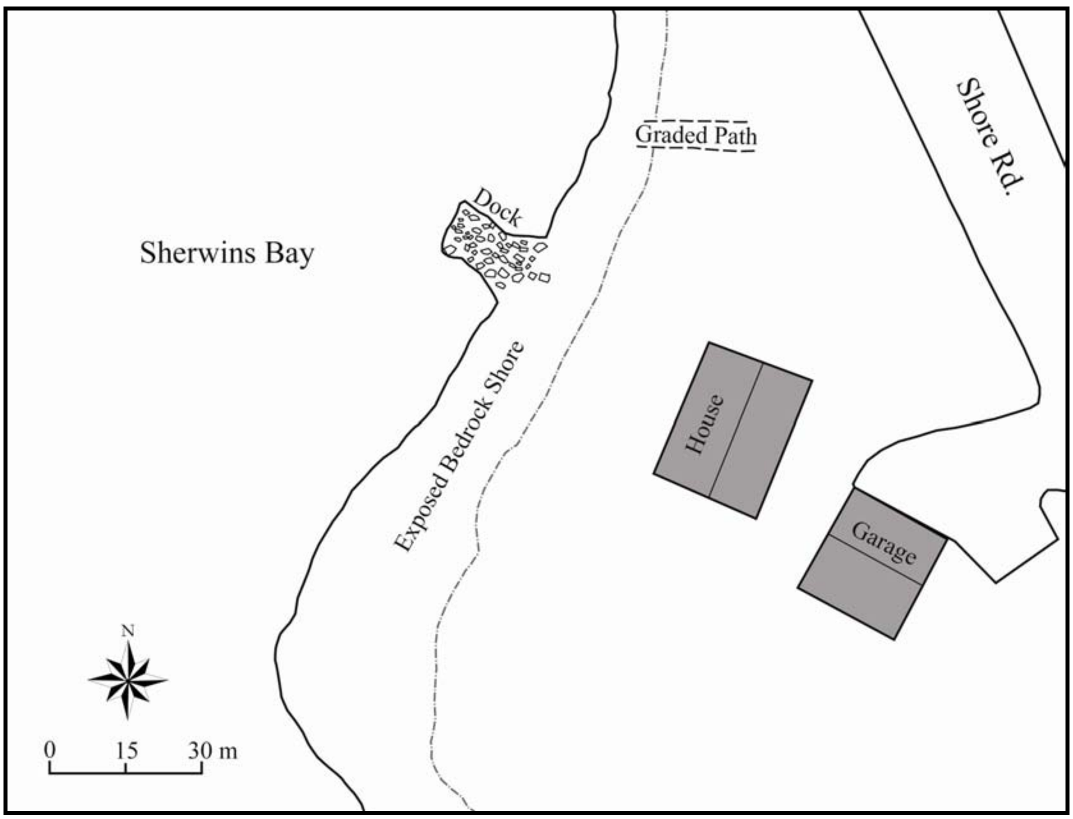

FIGURE A-13. Sherwins Bay haydock.

Haydock

A possible haydock is situated near the southeast corner of Sherwins Bay. The dock measures approximately 7 m wide at the shore, 2.7 m wide at its end, and extends

9.1 m into Sherwins Bay in a northwesterly direction (Figure A-13). The dock stands approximately 40 cm above the water and is constructed of rubble. Northeast of the dock, an artificially graded depression in the upper shore provides access to the flat bedrock portion of the shore leading to the dock. The graded area is approximately 3 m wide.

TABLE A-4
SUMMARY OF STORRS POINT ARCHAEOLOGICAL RESULTS

Site	Easting	Northing	Method	Date	Type
Gunboat	413452	4870154	Magnetometer / Probing	1814	Military
Storrs Harbor Shipyard	412717	4869577	Jefferson County Historical Society Excavation	1814	Military
Blockhouse	412924	4869560	Informant Interview	1814	Military
Firing Range	413349	4869398	Visible Ruin	1894	Military
Catfish Point Site	413183	4869413	Jefferson County Historical Society Collection	Middle Archaic - Middle Woodland	Domestic
Landing	413212	4869759	Visible Ruin / Informant Interview	ca. 1894	Military
Ice House	412401	4869361	Visible Ruin / Informant Interview	mid-19th c.	Commercial
Rock Pile	413395	4870496	Side-Scan Sonar	Unknown	Commercial
Cribbing	412593	4869591	Side-Scan Sonar	Unknown	Recreational?
Camp Farm	412767	4869507	Standing Structure / Visible Ruin	ca. 1840	Domestic
Agricultural Features	various	various	Visible Ruin	19th c.	Agricultural
Anchor	412974	4869835	Diver Survey	Unknown	Recreational?
Ellinger Anchor	unknown	unknown	Visible Ruin / Informant Interview	Unknown	Recreational?
Ice Spud	413207	4869891	Diver Survey	Unknown	Unknown
Unidentified Iron (5)	various	various	Diver Survey / Magnetometer	Unknown	Unknown
Small Pieces of Wood (4)	412590	4869900	Side-Scan Sonar	Unknown	Unknown
Timber	412745	4869688	Side-Scan Sonar	Unknown	Unknown
Modified Board	412814	4869725	Side-Scan Sonar	Unknown	Recreational?
Modified Timber	412651	4870127	Visible Ruin	Unknown	Recreational?
Three Timbers	412874	4869716	Visible Ruin	20th c.	Recreational?
"Boiler"	413582	4869978	Visible Ruin	Unknown	Unknown

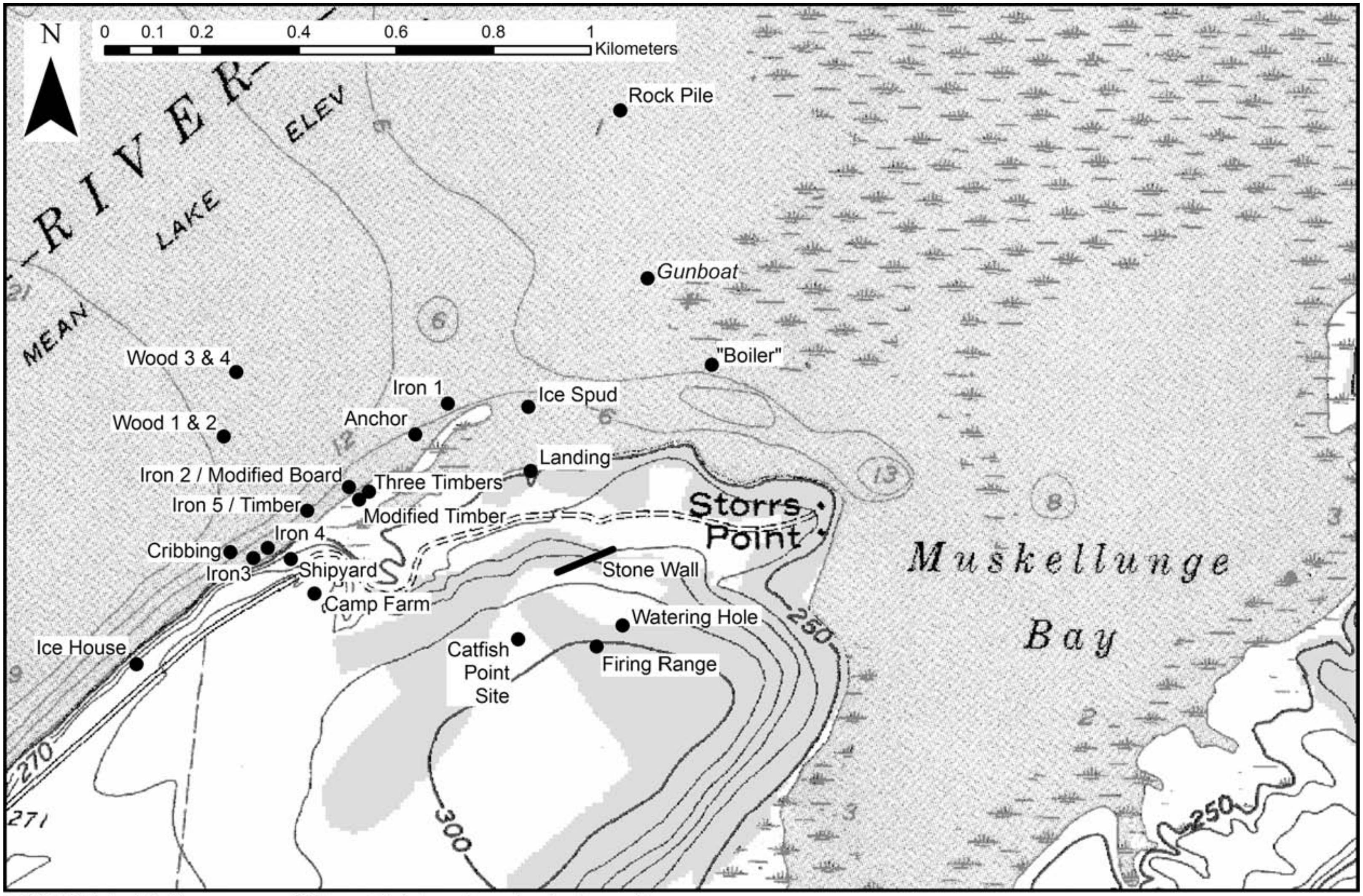

FIGURE A-14. Summary of Storrs Point archaeological results.

Storrs Point (Area 4)

Anchor

A 118-cm long wrought-iron anchor was identified during the diver survey along the north shore of Storrs Point (Figure A-15). The anchor has a single arm that extended 50 cm from the shank. The stock is formed of a 95-cm long iron bar.

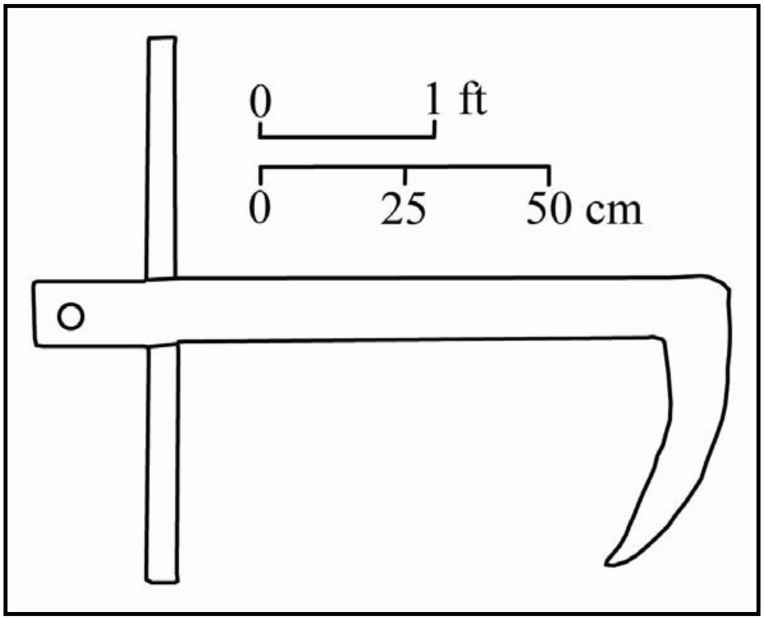

FIGURE A-15. Anchor, Storrs Point.

Ellinger Anchor

The Ellinger family possesses a 76-cm long, folding-stock, wrought-iron anchor reportedly recovered from the water near their property (Figure A-16).

Ice Spud

An approximately 1.8-m long ice spud was recorded near the mouth of Storrs Harbor (Figure A-17). The spud bar is 3.8 cm in diameter.

FIGURE A-16. Ellinger anchor, Storrs Point.

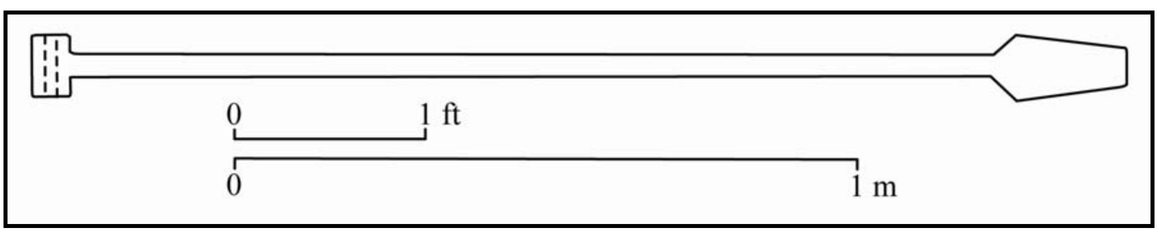

FIGURE A-17. Ice spud, Storrs Point.

"Boiler"

A 1.8- m long by 70-cm diameter cylinder was recorded imbedded in the sandbar at the juncture of Muskellunge Creek and the Black River (Figure A-18). The cylinder is constructed of wrought-iron plates and has evidence of additional pieces extending 95 cm from the main cylinder. These appendages appear to be mounting feet and are

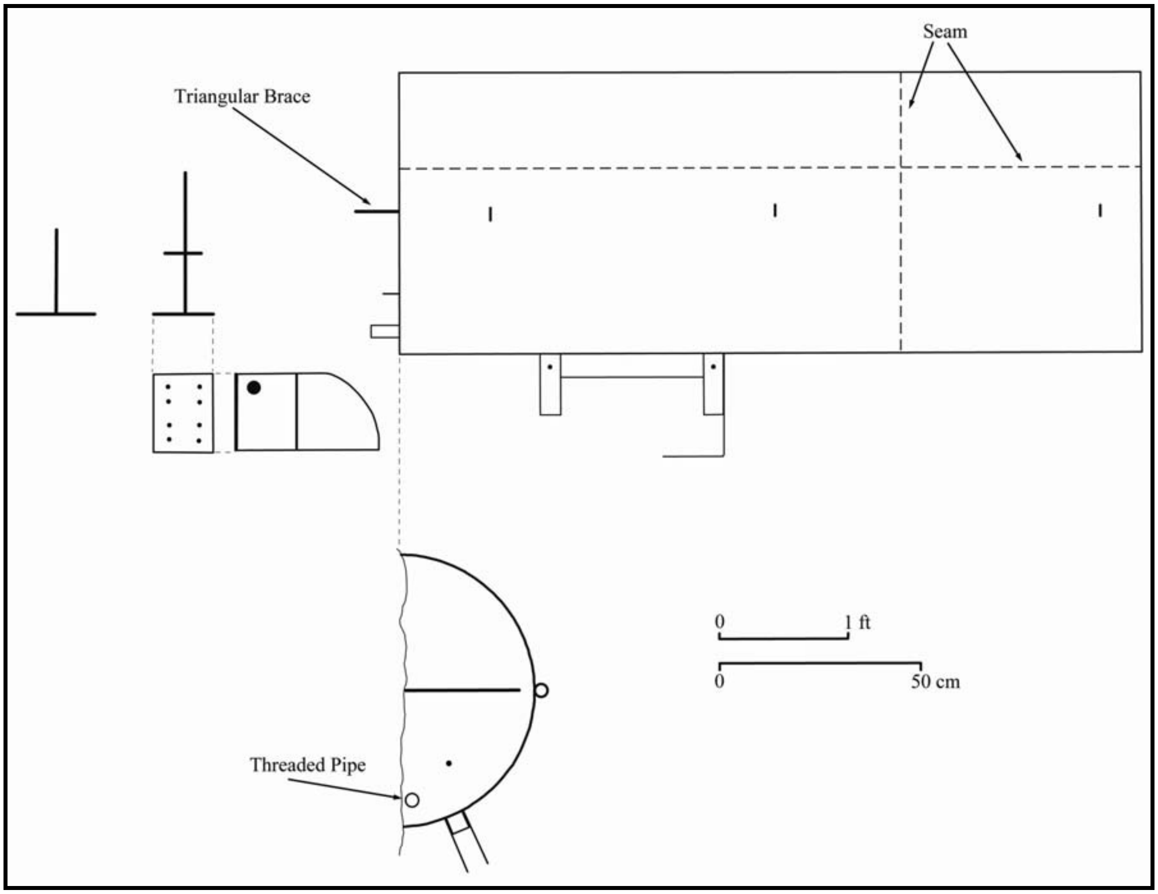

FIGURE A-18. Possible boiler, Storrs Point.

presumably attached to each other and the cylinder beneath the sand. The cylinder also has an additional bracket attached to its side and three eyelets along its upper surface. The cast iron plates are approximately thick 1.3 cm thick, as are the diameters of all visible bolts and holes.

Unidentified Iron

Five unidentified iron artifacts were recorded along the north shore of Storrs Point. The first piece is a badly corroded cast iron fragment that measures 60 x 25 x 7 cm (Figure A-19). The second consisted of two parallel pieces of angle iron, both 3.5 m long, spaced 47 cm apart (Figure A-20). The third artifact is a 53 cm long, 8 cm diameter

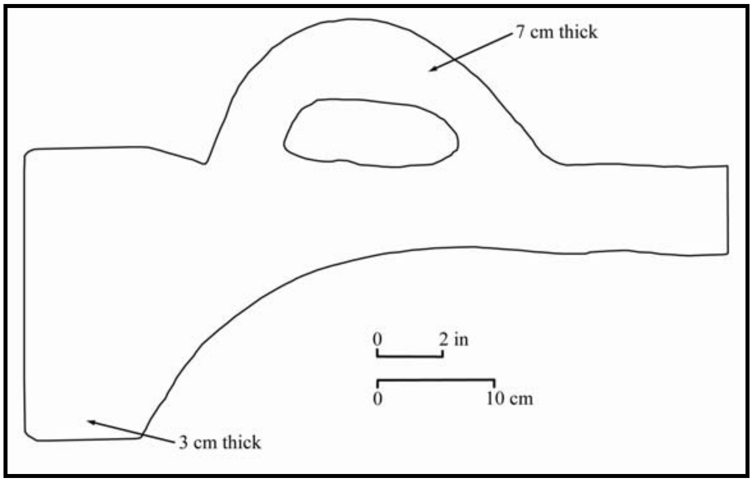

FIGURE A-19. Unidentified badly corroded cast iron artifact, Storrs Point.

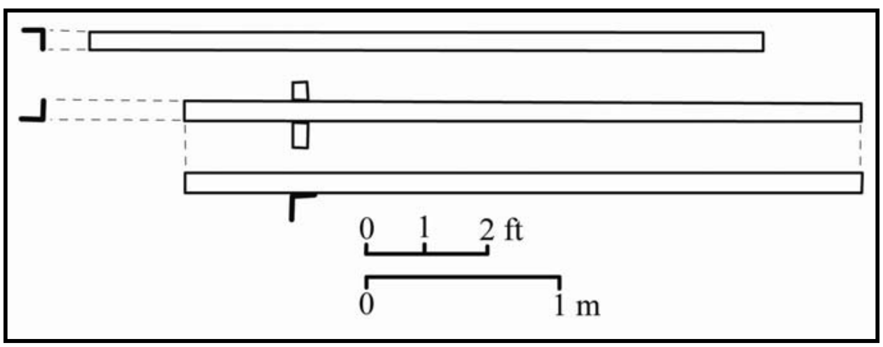

FIGURE A-20. Parallel angle irons, Storrs Point.

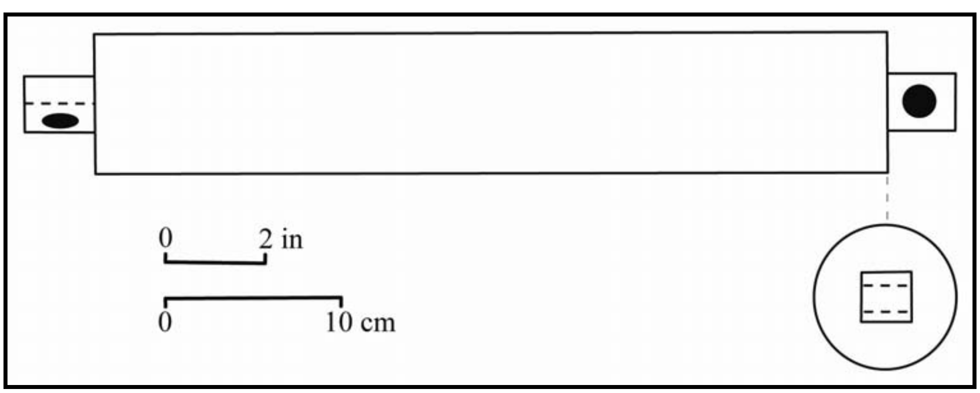

FIGURE A-21. Unidentified iron cylinder, Storrs Point.

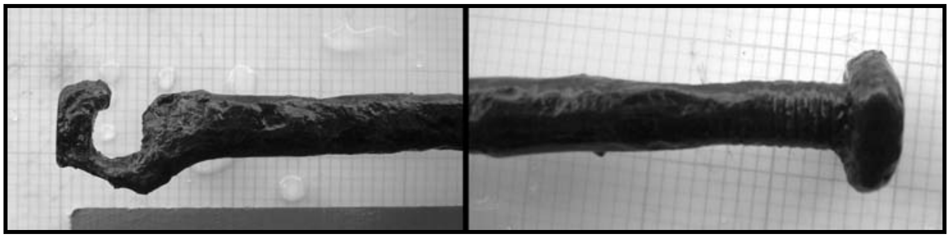

FIGURE A-22. Shaped ends of unidentified iron rod, Storrs Point.

FIGURE A-23. Bent iron bar, Storrs Point.

metal cylinder with a rectangular projection at each end (Figure A-21). The projections are oriented at 45° to each other and are pierced with a 5 cm hole. The fourth artifact is a 102 cm long wrought-iron rod. The rod measures 1.3 cm in diameter and has a 2.5 cm square nut threaded onto one end (Figure A-22). The opposite end appears to have been formed into a roughly hexagonal shape with an approximately 1.3 cm diameter hole in the middle. One side of the hexagon has broken, giving the end the appearance of a hook. The final item is a 45.7 cm long iron bar bent at a right angle near its midpoint (Figure A-23). The bar has a square section and is approximately 3 cm on a side. One end appears to have been expanded by hammering while the other is flattened into a chisel shape. None of these artifacts appear to be in situ.

Timber

A 3.7 m long timber was noted north of Storrs Point.

Modified Timber

A large (3 x 0.6 x 0.6 m) timber was noted along the north shore of Storrs Point. A single fastener hole was noted in the timber. This is likely a dock fragment deposited by ice.

Three Timbers

Three approximately 1.8 x 0.15 x 0.1 m timbers, attached with two 2.5 cm diameter tie-rods, were recorded along the north shore of Storrs Point (Figure A-24). These timbers appear to be the remains of a 20th century dock deposited by ice.

Modified Board

A modified board and iron plate were recorded north of Storrs Point. The board is 4.5 m long, 15.2 cm wide, and 8.9 cm thick (Figure A-25). Near the center of the board is a metal eye, and one end of the board is rebated. Immediately east of the board is a bent 81 x 36 cm iron sheet. It is not obvious that the board and the sheet iron are related, although the board may be decking from a pole dock.

FIGURE A-24. Three attached timbers, Storrs Point. View towards the south.

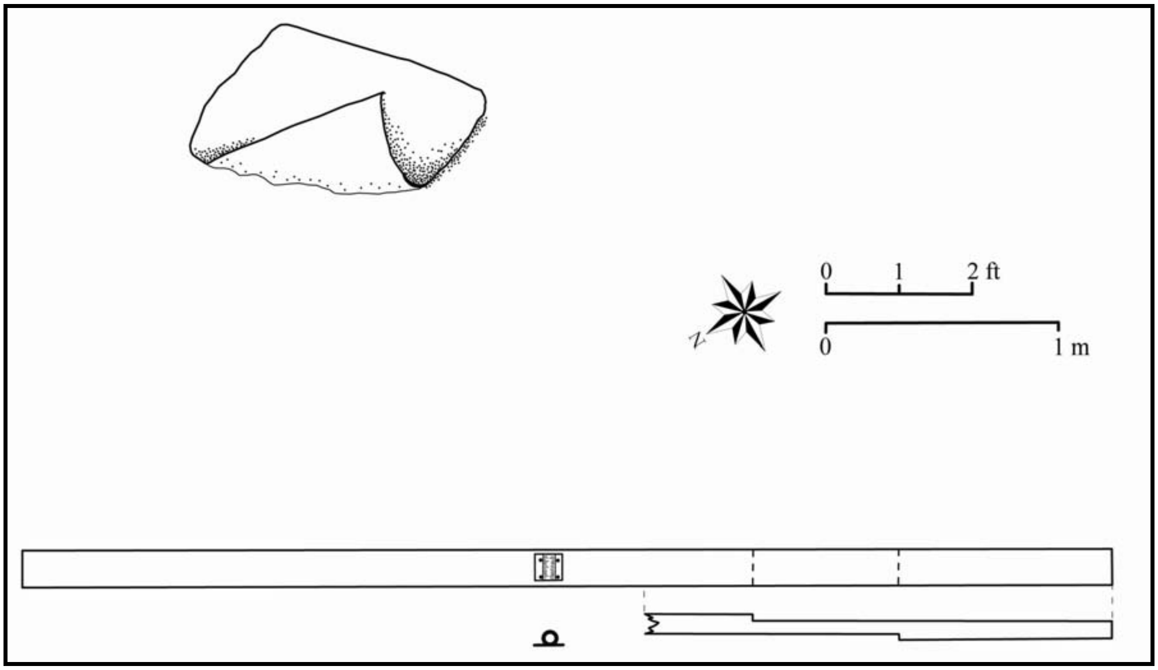

FIGURE A-25. Modified board and iron sheet, Storrs Point.

Small Pieces of Wood

Four small pieces of wood were recorded during side-scan sonar target inspections. One piece is an approximately 15.2 x 6.4 x 5 cm shaped, but water-worn, piece of wood (Figure A-26). Its original use is unknown. The second artifact is a 17.5 x 7.5 x 9 cm wedge (Figure A-27). A wire nail projects from the thick end of the wedge suggesting that it was once toe-nailed to another piece of wood. The third artifact is an 87 x 3 x 10 cm fragment of a tongue-and-groove board (Figure A-28). The final wooden artifact is two fragments of a triangular-shaped piece of wood (Figure A-29). The larger fragment is 73 cm long and 4 cm on a side. The smaller fragment is 18 cm long and 4 cm on a side. One end of the larger fragment is expanded into a chisel shape. The two fragments appear to be associated but do not join together to form a single artifact. Their original use is unknown. None of the small wooden artifacts were found in their original context.

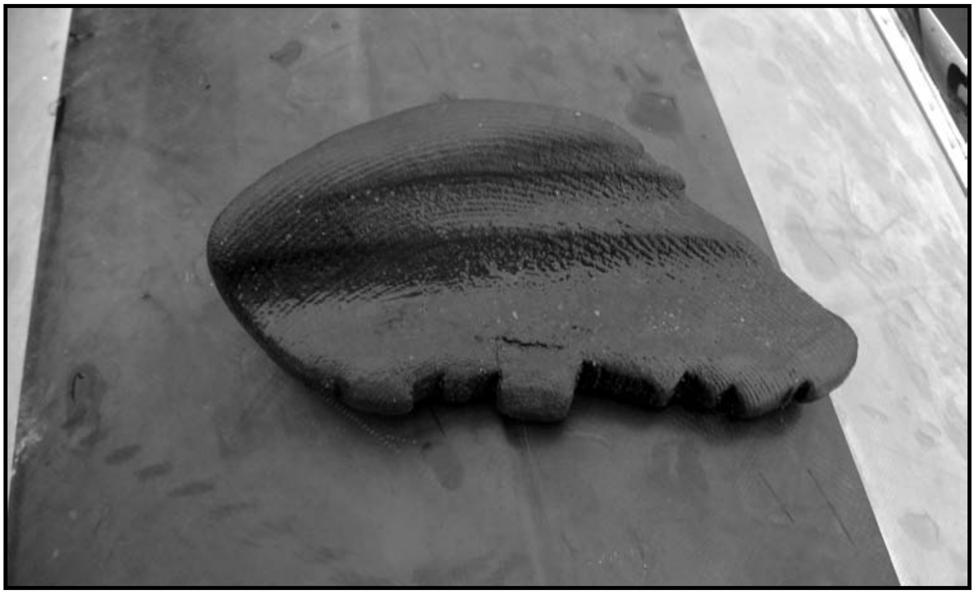

FIGURE A-26. Unidentified wooden artifact, Storrs Point.

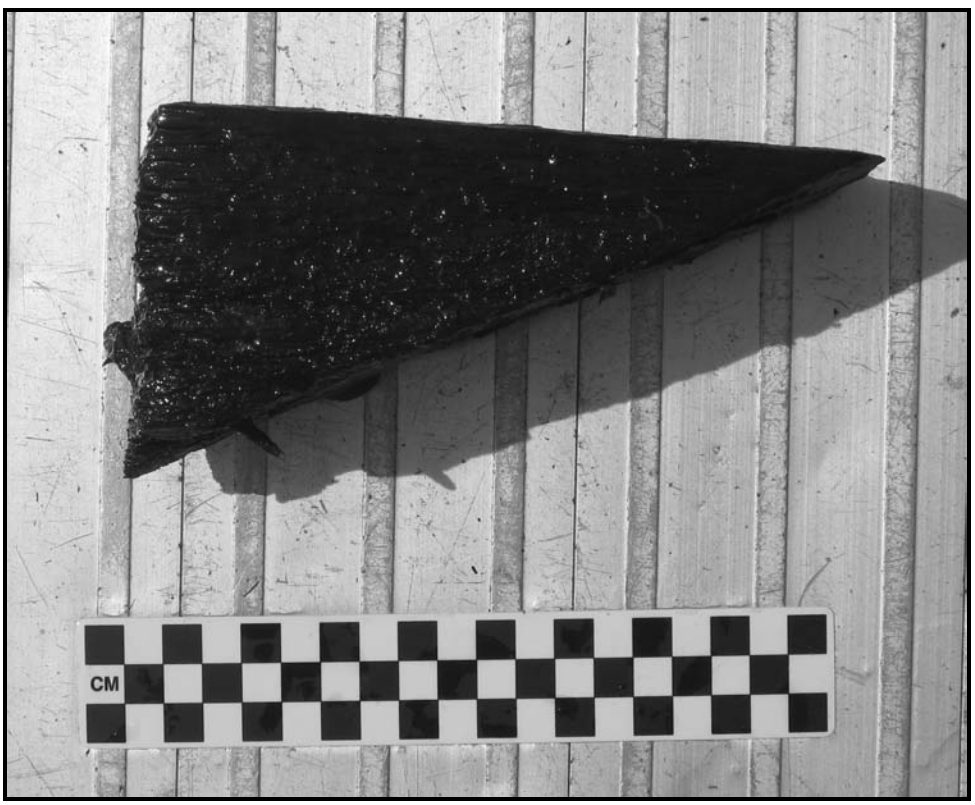

FIGURE A-27. Wooden wedge, Storrs Point.

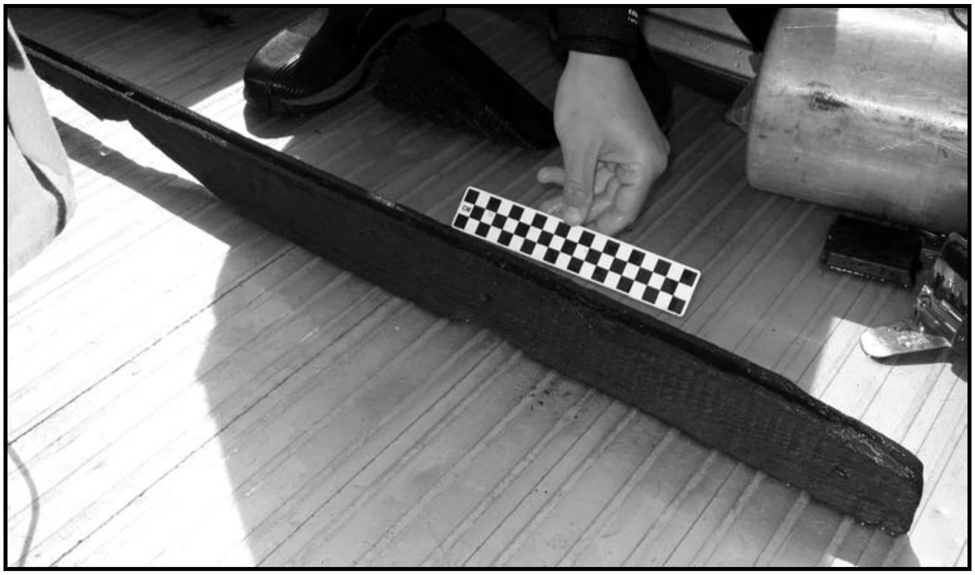

FIGURE A-28. Tongue-and-groove board, Storrs Point.

FIGURE A-29. Two fragments of a triangular-section wooden artifact, Storrs Point.

Catfish Point Site

The Catfish Point Site is known from amateur collections now stored at the Jefferson County Historical Society. These materials span from the Archaic Period through the Late Prehistoric Period and were likely collected from throughout Storrs Point. Informants (John Keegan and Tom Daley) reported finding Native American artifacts near the firing range (see below).

Storrs Harbor Shipyard

The Storrs Harbor Shipyard is currently being excavated by volunteers from the Jefferson County Historical Society under the direction of Dr. Timothy Abel, with archival research conducted by Gary Gibson. A magnetometer survey indicated the likely location of the blacksmith shop and excavations have focused on the probable location of the barracks. Work at this site is ongoing and publications are forthcoming.

The slope in the vicinity of the Storrs Harbor Shipyard is as follows:

At waterline = 8°

10 m from waterline = 8°

20 m from waterline = 3°

30 m from waterline = 4°

40 m from waterline = 8°

50 m from waterline = 8°

60 m from waterline = 14°

70m (at edge of Storrs Rd.) = 10°

Gunboat

Cartographic, historic, magnetic, and probe data suggest that an 1814 gunboat may be buried in the sandbar near the junction of Muskellunge Bay and the Black River. The probe survey eliminated much of the area indicated by the magnetic and historic cartographic evidence to a depth of approximately 1.5 m. Additional archaeological survey, involving a combination of excavation, additional probing, and sub-bottom profiling will be necessary to definitively locate the gunboat wreck. The exact specifications of the gunboat are unknown, but it was likely built on the 75-foot model.

Blockhouse

A War of 1812 era blockhouse foundation was reported (John Keegan and Kingley Irwin) to be situated between Storrs Road and Storrs Harbor within the curve of the road at the base of the hill. Dense brush made locating this foundation impossible.

Cribbing

A 1.2 x 1.5 m crib was recorded north of Storrs Point (Figure A-30). It is constructed of square timbers 8-13 cm on a side. The crib is deeply buried with approximately 11 cm projecting above the sediment and the sediment-filled interior.

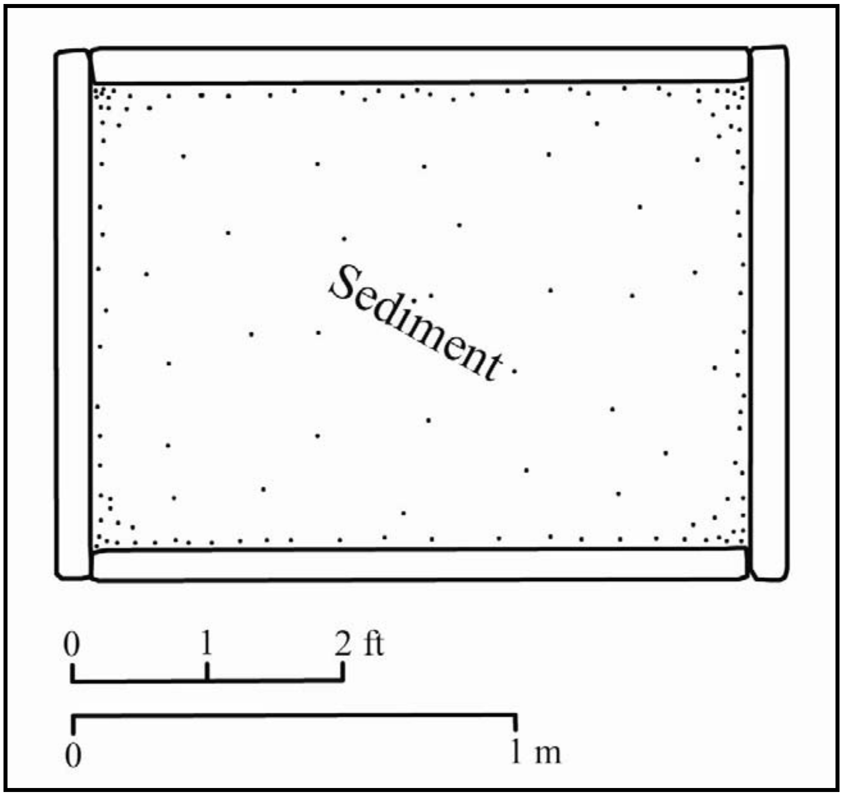

FIGURE A-30. Cribbing, Storrs Point.

Rock Pile

An approximately 10.7 m long , pile of rocks, oriented northeast-southwest, was recorded adjacent to the Muskellunge Bay sandbar. The pile is lozenge shaped, approximately 4 m wide and 0.9 m high above the sediment. Although the pile is distinct, the edges are diffuse. The pile is composed of generally flat rocks with irregular edges, typically 60 cm in diameter and 2-37 cm thick.

Camp Farm

The current Whelpley house was originally constructed as a barn by the Camp family during the mid-19th century. The original house foundation is located in a small grove of trees west of the house. The foundation is of well-laid stone with an internal cistern.

Ice House

The ice house is no longer extant, but the access ramp from the bluff-top to the water remains visible (Figure A-31). The ramp is approximately 2.5 m wide and extends for approximately 12 m at 35°. The ice house is associated with the Camp farm.

FIGURE A-31. Ice house ramp, Storrs Point. View towards the southwest.

Agricultural Features

Stone walls, abandoned paths, and a depression/vernal pond were noted on the uplands of Storrs Point. These features likely relate to the agricultural use of the point during the 19th and early 20th centuries.

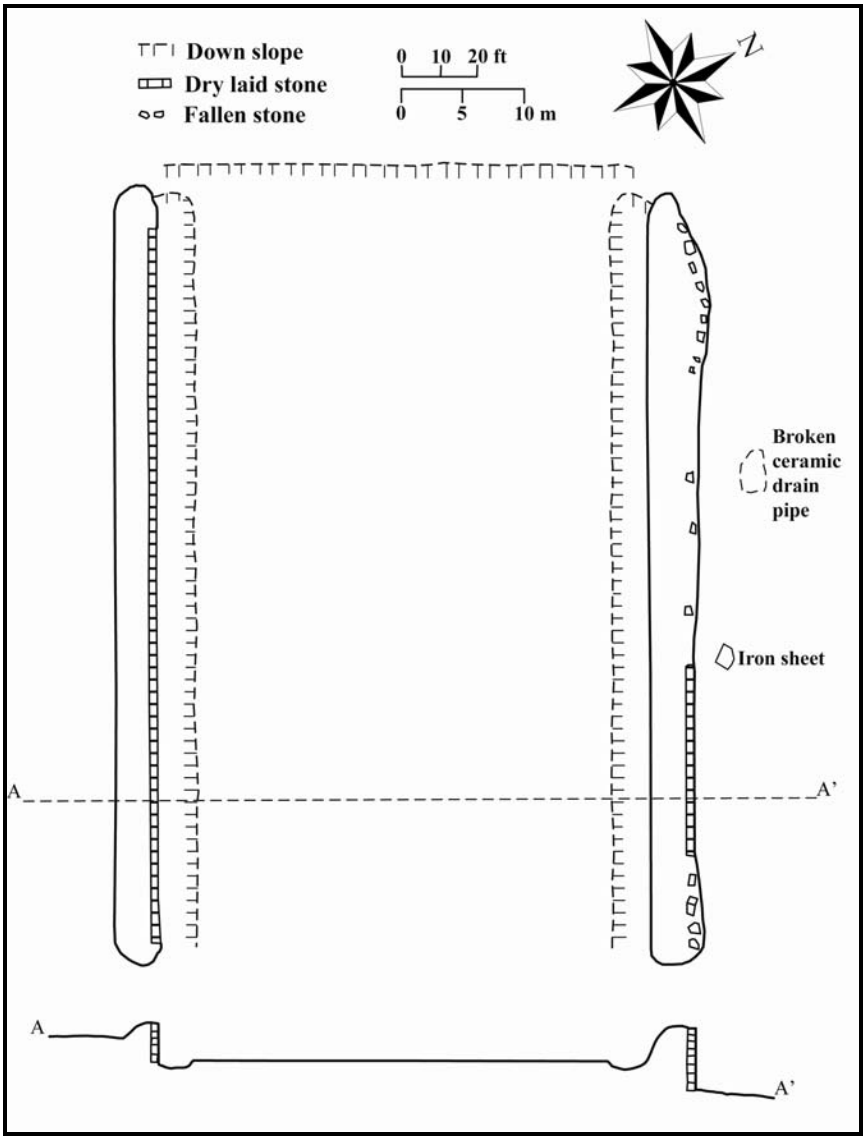

FIGURE A-32. Storrs Point firing range.

Firing Range

The firing range is located on the Storrs Point uplands. It consists of two 64 m long berms positioned 40 m apart (Figure A-32). The berms are 3-5 m high, approximately 1 m wide at the top and 3.5-5 m wide at the base. They are constructed of dry-laid stone on the up-range side (northeast; Figure A-33) and earth on the down-range side (southwest). Shallow ditches (approximately 0.7 m deep) are present along the

FIGURE A-33. Detail of Storrs Point firing range stone wall.

interior edges of the berms and the entire area between the berms is lower than the surrounding grade. Both of these characteristics are likely a result of efforts to prepare or level the location prior to construction. Several artifacts, including historic ceramics, drain pipe fragments, and an iron sheet, were noted immediately north of the northern berm. The firing range was intended to be approached by a dirt road that left Storrs Road near where it bends at the shore and ran east towards the range. This road is visible in an early 20th century aerial photograph owned by Robert Brennan.

Landing Place

The landing place is an approximately 18-m wide section of low shore at the mouth of Storrs Harbor (Figure A-34). This low shore provides a shallower slope than the approximately 4-m high bluff that bounds it. The landing place is a human modification of an existing low place on the shore. Immediately adjacent to the landing place is a flat bedrock outcrop at the waterline.

FIGURE A-34. Landing place, Storrs Point. View towards the south. The dark house is situated within the landing place.

Carleton Island (Area 5)

Flake

A single flake of what appears to be Onondaga chert was identified on the uplands during the pedestrian survey.

Fort Haldimand and Shipyard

Fort Haldimand is an approximately 215 x 115 m Vauban-influenced ditch-and-rampart fortification with walls forming three sides of an octagon. The fourth side of the fort is formed by the bluff (Figure A-36). Half-octagonal redoubts project from the three landward sides. At one time the fort contained or was associated with barracks, storehouses, a saw pit, a lime kiln, a combined carpenter shop and blacksmith shop, and a bakery. Later squatters also built houses inside the fort. In addition to the ditch and rampart, visible remains within the fort include the bases of barrack chimneys and a well.

A Provincial Marine dockyard situated at the head of Carleton Island was associated with Fort Haldimand. The dockyard included launching ways, carpenter and blacksmith shops, saw pits, timber yards, a ropewalk, a storehouse, and, for a time, gardens. With the exception of the pier, located in North Bay on Aubrey Head, the

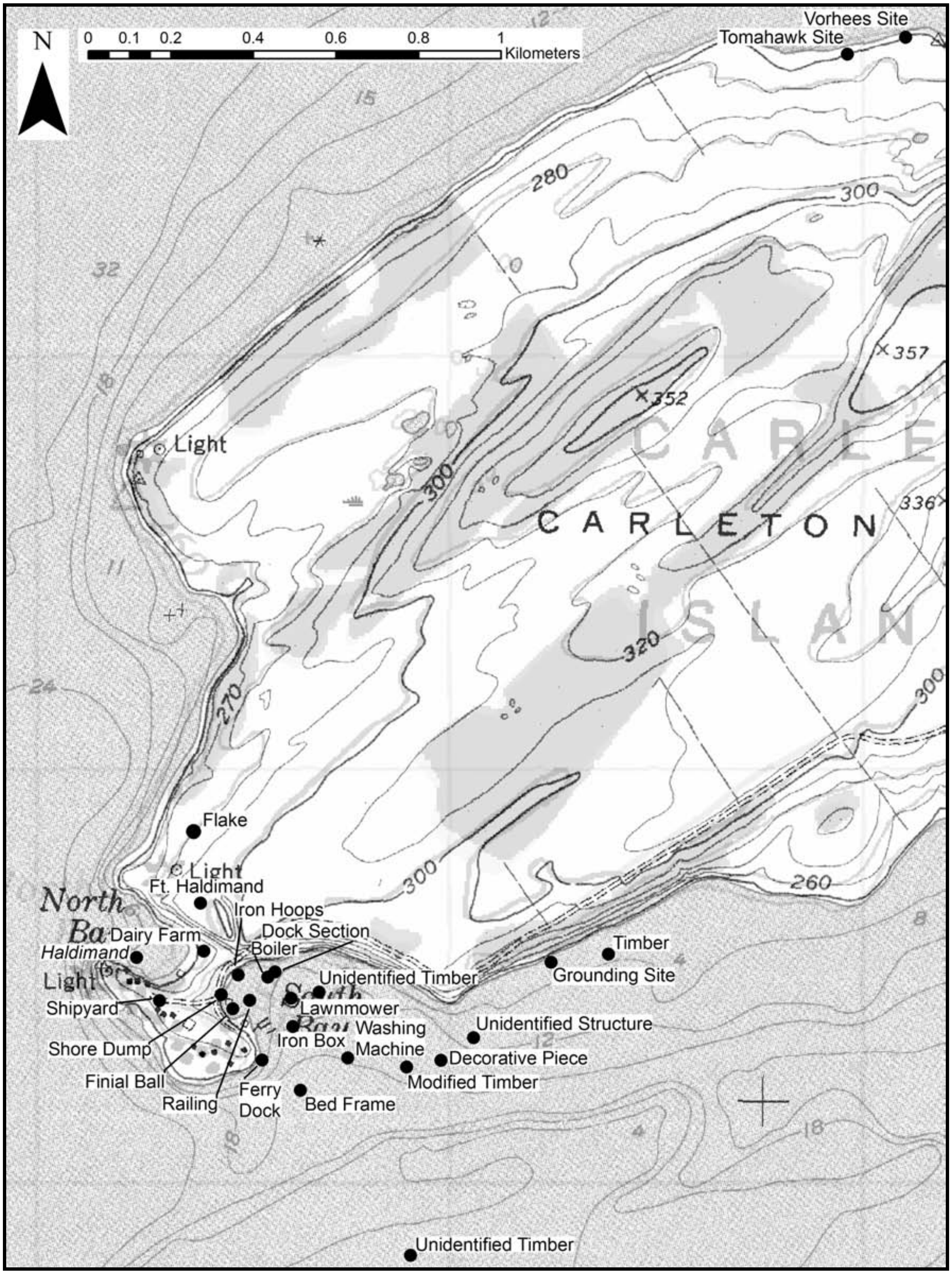

FIGURE A-35. Summary of Carleton Island archaeological results.

TABLE A-5
SUMMARY OF CARLETON ISLAND ARCHAEOLOGICAL RESULTS

Site	Easting	Northing	Method	Date	Type
Flake	395406	4891864	Pedestrian Survey	Pre-Contact	Unknown
Fort Haldimand	395375	4891669	Visible Ruins	1778-1783	Military
Shipyard	395322	4891454	Archival Research	1778-1783	Military
Stuart Cottage	381437	4898116	Pedestrian Survey	ca. 1778	Military/ Domestic
Haldimand	395245	4891554	Informant Interview/ Diver Survey	late 18th c.	Military
Tomahawk Site	396989	4893743	Informant Interview/ Private Collection	early 19th c.	Domestic?
Vorhees Site	397129	4893787	Informant Interview/ Private Collection	early 19th c.	Domestic?
Dairy Farm	395395	4891562	Visible Ruins	mid to late 19th century	Agricultural
Point Structures	various	various	Standing Structures / Visible Ruins	ca. 1875-1900	Domestic
Point Docks	395536	4891369	Standing Structures / Visible Ruins / Diver Survey	late 19th c.	Recreational
Ferry Dock	395545	4891306	Visible Ruins / Side-Scan Sonar	mid to late 19th century	Transportation
Boiler and winch	395609	4891554	Diver Survey	late 19th to mid 20th c.	Unknown
Possible Grounding Site	396244	4891540	Side-Scan Sonar	Unknown	Unknown
Washing Machine	395753	4891308	Side-Scan Sonar	early to mid 20th c.	Domestic
Iron Box	395620	4891384	Side-Scan Sonar	Unknown	Unknown
Lawn Mower	395614	4891453	Side-Scan Sonar / Diver Survey	late 19th c. to mid 20th c.	Domestic
Railing	395515	4891449	Diver Survey	Unknown	Unknown
Finial Ball	395474	4891428	Diver Survey	Unknown	Unknown
Dock Section	395591	4891542	Diver Survey	Unknown	Unknown
Shore Dump	395446	4891463	Diver Survey	Unknown	Domestic
Iron Hoops (4)	395487	4891510	Diver Survey	Unknown	Unknown
South Bay Trash	various	various	Diver Survey	early 20th c.	Domestic
Unidentified Structure (5-3)	395905	4890830	Side-Scan Sonar	Unknown	Unknown
Unidentified Timber	365683	4891464	Side-Scan Sonar	Unknown	Unknown
Decorative Piece	395978	4891302	Side-Scan Sonar	Unknown	Unknown
Timber	396383	4891559	Side-Scan Sonar	Unknown	Unknown
Bed Frame	395638	4891230	Side-Scan Sonar	20th c.	Domestic
Unidentified Structure (5-48)	396057	4891357	Side-Scan Sonar	Unknown	Unknown
Modified Timber	395895	4891286	Side-Scan Sonar	Unknown	Unknown

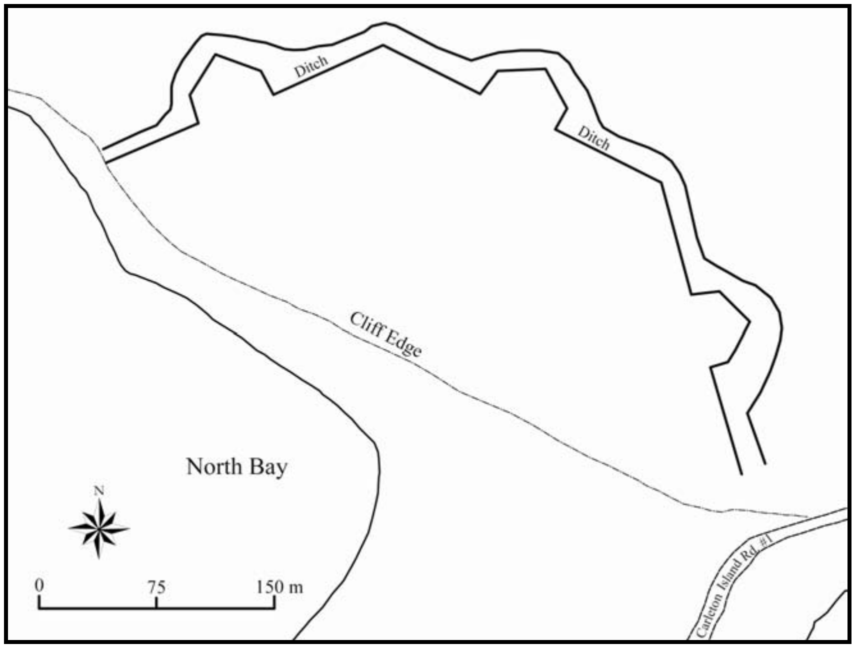

FIGURE A-36. Fort Haldimand, Carleton Island.

shipyard is not visible on the surface. A map based on georeferenced historic maps indicates the approximate locations of the shipyard structures on the modern landscape (Figure A-37).

Merchant Point was also an important part of the Carleton Island system during the American Revolution; however, it is poorly understood both archaeologically and historically.

Haldimand

The snow *Haldimand* was built at Oswegatchie in 1771 and measured 23.2 (76 feet) on deck. This vessel is the most likely candidate for the ship that was scuttled in North Bay some time prior to 1810. The wreck measures 22.3 m (73.3 ft) by 6.6 m (21.5 ft) and was dated to the mid to late 1770s based on the bore diameters ratios of recovered pipe stems (Murphy 1976a:19; Murphy 1976b:10). Several other artifacts including buttons, armaments, and weapons, were recovered from the wreck and surrounding bay beginning in at least the 1960s.

FIGURE A-37. Historic Carleton Island shipyard structures superimposed on modern landscape.

Stewart Cottage

The Stewart Cottage, standing at King and Gore streets in Kingston, is not depicted on the accompanying maps because of its distance from Carleton Island. The building is the last standing example of three to five structures transported from Carleton Island to Kingston at the end of the American Revolutionary War. The Stewart cottage is a two-by-five-bay, two-and-a-half-story building with a gable roof. The building appears to be two sections under a single roof. The northwest section has a central entrance flanked by windows, while the southeast section has a single entrance with a window to the southeast. A large chimney projects from the roof between these two sections so that it is not in the center of the structure. There is a one-story addition on the northeast side of the house. The foundation is stone, and the structure is covered with vinyl siding and asphalt shingles. There is little to no architectural embellishment.

Vorhees Site

The Vorhees Site was dug by Charles Vorhees, a local artifact collector. All of the artifacts were recovered from an approximately 9 m^2 area centered on a few flat rocks. The rocks were surrounded with ash and may have been a chimney base. Vorhees noted no other evidence of a structure. The collection includes military buttons and insignia from the British Royal Highland Emigrants (84th Regiment), 21st Regiment of Foot, 68th Regiment of Foot, and 71st Regiment of Foot. It also includes three non-military buttons: one was of the hollow, cast semi-spherical variety; the other two were plain-front disks with the back marks “Standard Gilt” and “Very Best.” Several coins were also found at the site. They include a well-worn 1772 British half penny, an 1816 Montreal half penny token, and an 1820 U.S. penny. Also included in this assemblage are two different Brock tokens commemorating Sir Isaac Brock’s death at Queenstown Heights in 1812. One of the tokens is decorated with a ship and the slogan “SUCCESS TO THE COMMERCE OF UPP^{R}. & LOW^{R}. CANADA” on the obverse and the following inscription on the reverse: “SIR ISAAC / BROOK [sic]. BAR^{T}. / THE HERO OF / UPPER CANDA. / WHO FELL AT THE / GLORIOUS BATTLE OF / QUEENSTOWN HEIGH^{TS} / ON THW 13 OCT^{R}. / 1812.” The second token is pierced, obscuring what may be a lighthouse on the obverse surrounded by the words “SUCCESS TO COMMERCE & PEACE TO THE WORLD”. The reverse shows two angels placing a laurel on what appears to be a stylized depiction of the original Brock monument surrounded by the words “S^{R}. ISAAC BROCK THE HERO OF UP^{R}. CANADA”. The collection also includes cutlery including two spoons (one marked “W. TUTIN”) and two two-tine forks (one with the bone handle scales still attached). The site also produced door hardware (including a heart-shaped lock), one door strap, and two door gudgeons of different sizes. There is also black bottle glass and clear stemware

FIGURE A-38. Representative ceramics from the Vorhees Site, Carleton Island.

FIGURE A-39. Boundary marker, Vorhees Site, Carleton Island.

fragments. The ceramics consist of blue shell-edged whiteware (two varieties), mochaware, and blue hand-painted whiteware (Figure A-38). Miscellaneous items in the collection include a folding knife, a pressed metal snuff box, musket balls, an ax head, square nails, a pipestem, two pairs of scissors, and a trigger guard. Finally, the site collection includes a boundary marker consisting of an iron spike driven through two copper alloy disks that are held in place with a perpendicular pin (Figure A-39). One is inscribed “Edward Mafter” and the other “Buford Car_ _ er”.

FIGURE A-40. Representative artifacts from the Tomahawk Site, Carleton Island.

Tomahawk Site

The Tomahawk Site was also collected by Charles Vorhees. The collection consists of a square nail, a piece of blue shell-edged whiteware, a spoon handle, a decorated cast spoon, a three-tine fork with bone handle, a piece of heavy utilitarian brown-glazed ceramic, and an unidentified baluster-shaped copper alloy item (Figure A-40). The site is named for what Vorhees described as a “tomahawk spike.” This artifact is a single piece of wrought iron bent to form and eye and a long tail (Figure A-41).

FIGURE A-41. Possible tomahawk spike from the Tomahawk Site, Carleton Island.

Ferry Dock

The ferry dock at Government Point consists of three stone-filled cob-work cribs measuring approximately 3.7 x 4.6 m (Figure A-42). The cribs are built of partly squared 28 cm diameter timbers; some remain partly covered with bark. Iron drift pins secure the corners. The stone fill rests on subfloors of smaller timbers. This subfloor is situated

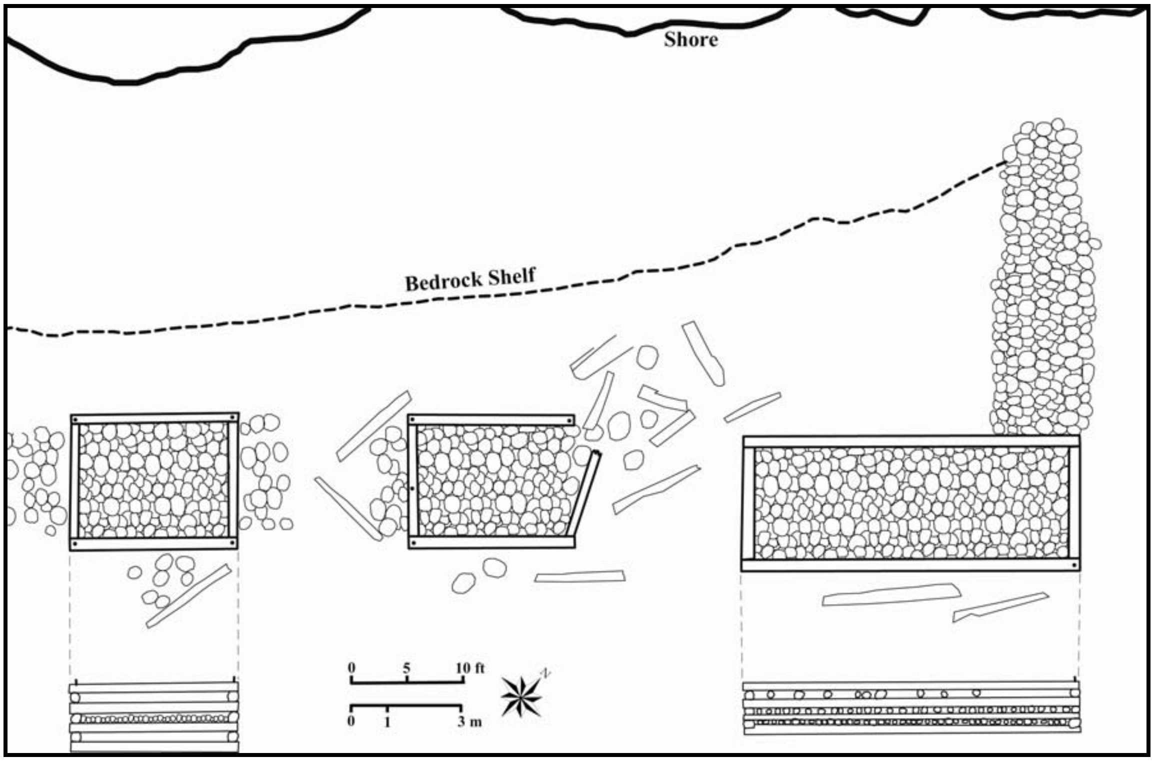

FIGURE A-42. Ferry dock, Carleton Island.

FIGURE A-43. Ferry dock mooring eye, Carleton Island.

approximately 0.8 from the bottom on the southernmost crib. The central crib does not contain evidence of a subfloor, and the northernmost crib has subfloors at every level. The rock fill consists of rough-edged stones approximately 60-90 cm in diameter. The height of the cribs decreases from south to north to accommodate the rising bottom. The southernmost crib is approximately 2 m (7 timbers) high, the center crib is 1.7 m (8 logs) high, and the northernmost crib is 1.2 m (6 logs) high. The northernmost timber is slightly out of line with the other two cribs, extending approximately 60 cm farther to the east. It is also connected to the shore with a stone causeway. Two wrought-iron mooring eyes were noted immediately on shore from the ferry dock (Figure A-43).

Possible Grounding Site

A 12.2 x 1.8 mound of gravel was noted along the south side of Carleton Island. The mound projected approximately 40 cm above the bottom and was covered with marine growth. The cause of the mound is unknown, but it may have been created by a small vessel grounding broadside to the shore.

Dairy Farm

The Marsh/Folger farm, situated on the neck at the head of Carleton Island, was also the “model farm” of the Wyckoff Villa. It survives today as a series of eight foundations and structures (Figure A-44). The largest foundation is that of an L-shaped barn. The main block of the structure consists of a raised dressed-stone foundation measuring 12.9 x 37.6 m. The foundation is approximately 1 m high and contains 16 stone pillars of the same height; these likely supported the floor. The exterior wall becomes shorter from south to north due to the rising topography so that it is at the surface near the north end of the structure. The west side of the foundation has four holes or bays in the foundation wall. Attached to the northwest side of the foundation is a large, flat surface of earth bounded on its south side by a low stone foundation. This surface appears to have been an extension to the barn and was either covered or served as a

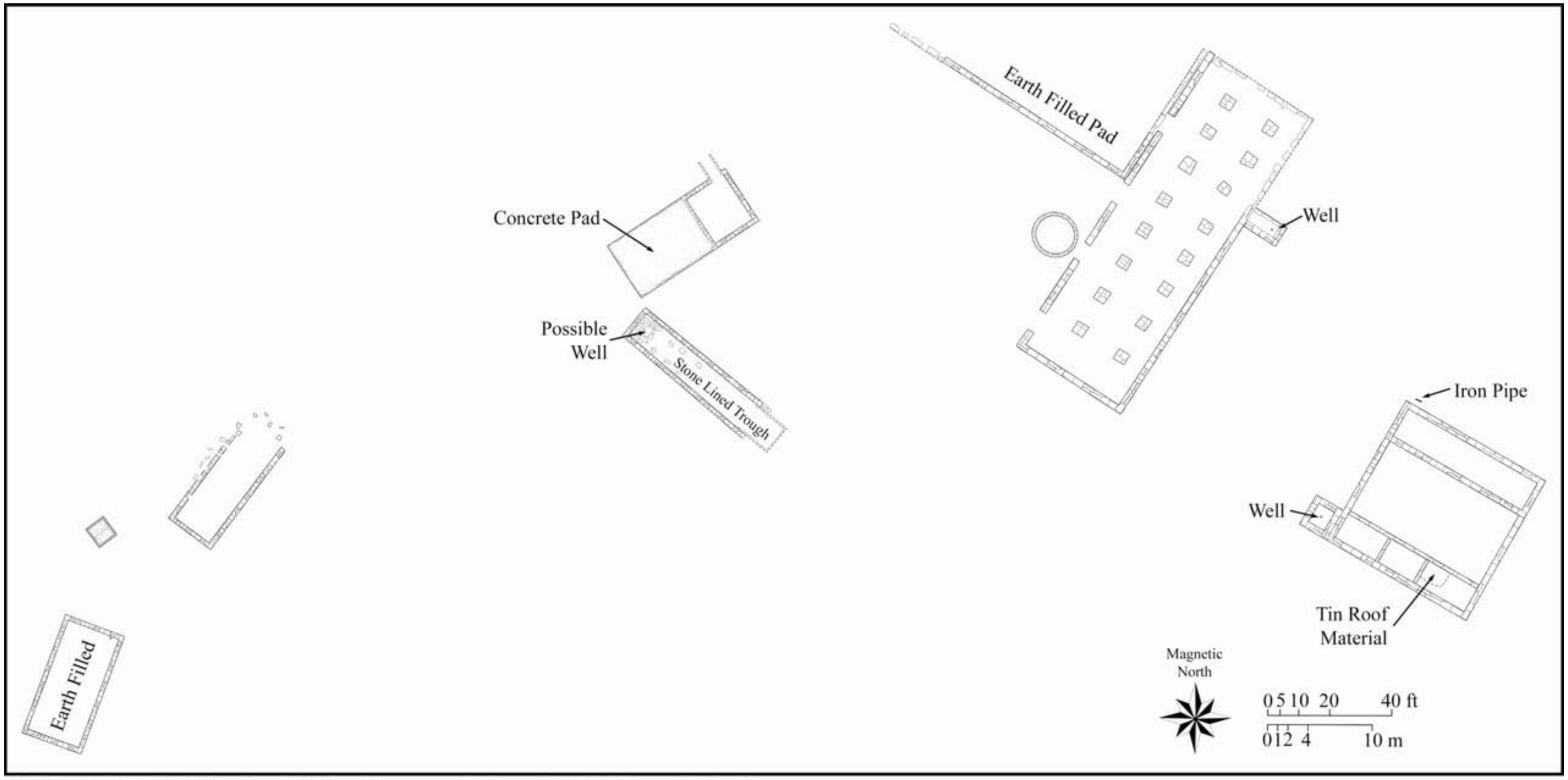

FIGURE A-44. Sketch of dairy farm on the head of Carleton Island.

barnyard. Attached to the east side of the foundation is a small foundation (1.8 x 4.9 m) defined by stones on the surface. A pipe projects from the ground within this second foundation. The pipe is likely the remains of a pump that accessed a subterranean well. Immediately west of the foundation is a circular, concrete-lined stone trough with a diameter of 6.4 m. The trough walls are approximately 60 cm high and the trough is roughly the same measurement deep.

East of the barn foundation is what may be the farm house foundation. The foundation consists of stones at the ground surface that define a 15.9 x 12.3 m structure divided into three unequal sections. Flat stone was also noted on the surface, suggesting that portions of the structure had a stone floor or subfloor. Tin roofing material was found in the southeast corner of the foundation. The southeast corner includes a 3 x 3 m extension that contains a vertical pipe similar to that attached to the barn and also likely a pump well.

South and west of the barn foundation is the foundation of a possible milking barn. The foundation measures 15.5 x 3.4 m, is excavated approximately 60 cm into the ground, and is lined with rough-dressed stone. The entire foundation is in a poor state of preservation, rendering its original dimensions uncertain. The eastern portion is flush with the ground surface, while the western end is approximately 60 cm above grade. Immediately north of this long, thin foundation is another poorly preserved foundation. This foundation appears to measure 6.1 x 13.9 m. Its southern two-thirds consist of a concrete surface over a semi-dressed stone pad, while the northern third is a 60 cm deep semi-dressed stone foundation. A poorly defined trench extends from the northwest corner towards the shore of North Bay. The purpose of this structure is unknown, but the presence of the concrete floor and the below-grade foundation with access to lake ice suggests that it may have been used to produce and store dairy goods.

South of the possible milking barn is a 12.4 x 6.2 m raised stone foundation. The foundation is of dressed stone and stands approximately 60 cm above the surface but is filled to form a raised pad. The purpose of this foundation is unknown. Approximately 7 m north of this foundation is a small brick and stone structure at the edge of North Bay.

This structure measures 2.3 m on a side and stands approximately 1.5 m high with a pitched wooden roof. This structure may have been an ice house, but that identification has not been verified.

Finally, there is a 12.3 x 6 m dressed stone foundation just north of the possible ice house. The north end of this structure has collapsed into North Bay. The purpose of this structure is unknown, but, given its proximity to the water, it may have been a boathouse.

Point Structures

South of the dairy farm are two foundations that appear to have been associated with the Utica Club (Figure A-45). One of these buildings was the kitchen house of the club, but it is unclear which foundation belonged to that building. Both foundations are built of dressed stone that, although of a material similar to that used in the farm foundations, is of distinct craftsmanship. The more northerly foundation measures 11 x 11 m and is approximately 1.5 m deep. A bulkhead entrance is evident on the north side of the foundation and a fallen L-shaped wall divides the interior. A 2.9 x 1.4 m, concrete-lined, stone cistern is located in the northeast corner of the foundation. The other foundation, closer to the standing Utica Club structures, measure 7.4 x 8 m and is approximately 2 m deep. A 2.7 m wide, 5.6 m long bulkhead entrance extends from the foundation northeast towards North Bay.

In addition to these foundations there are several standing structures, foundations, and structural remains dating to the late 19th and early 20th centuries on the head of Carleton Island. These structures are summarized in Figure A-46 and Table A-6.

South Bay Docks and Boathouses

The docks and boathouses of South Bay are summarized in Figure A-46 and Table A-6. Detailed inspections were made of the two Wyckoff boathouses foundations and the Schick boathouse foundation. The U-shaped *Cornell* boathouse foundation is attached to shore by a 3.6 m long wooden gangplank (Figure A-47). There does not

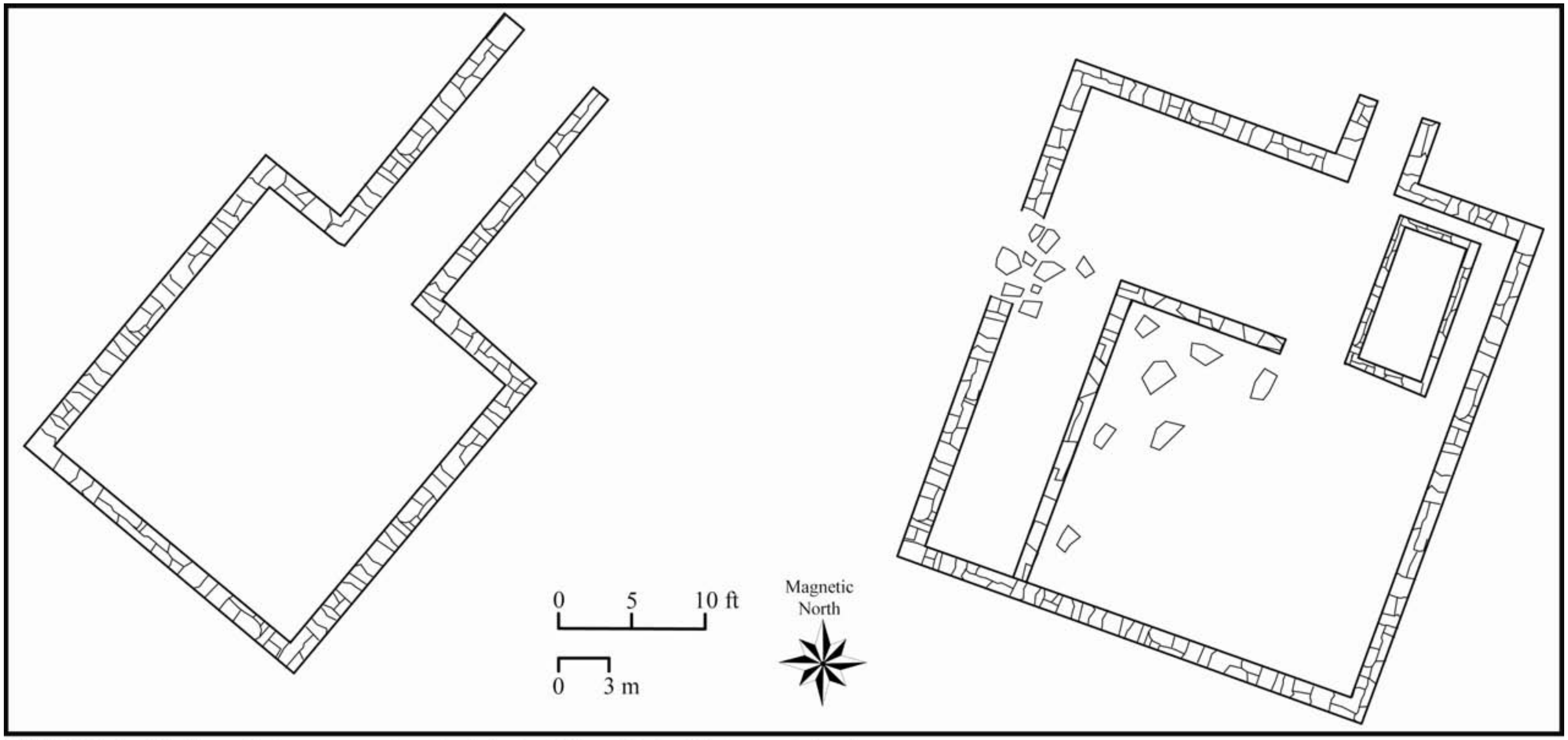

FIGURE A-45. Foundations associated with the Utica Club, Carleton Island.

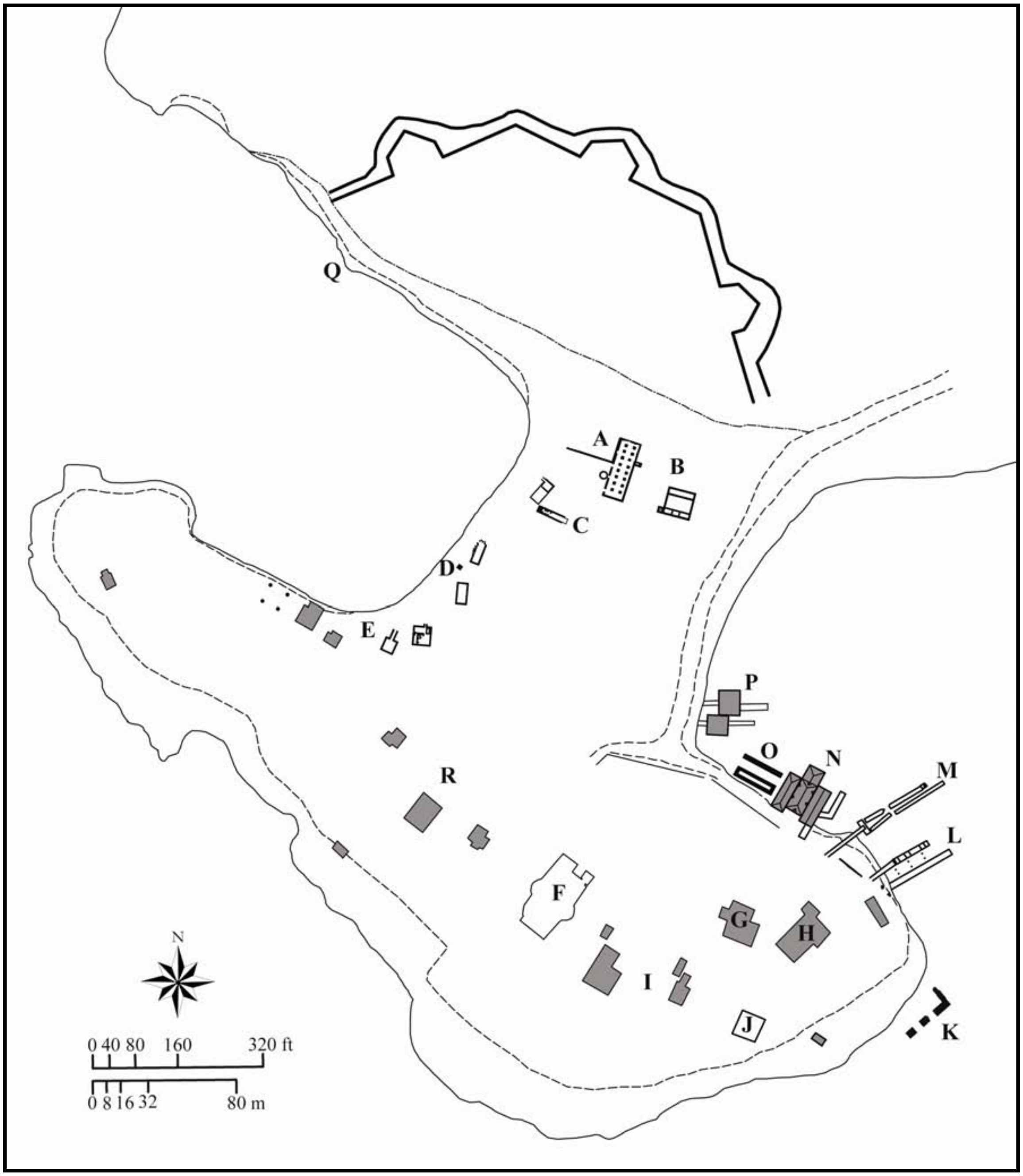

FIGURE A-46. Late 19th and early 20th century structures on head of Carleton Island. Numbers correspond with Table A-6.

TABLE A-6
SUMMARY OF CARLETON ISLAND STRUCTURES

Letter	Name	Date	Notes
A	Barn	ca. 1891	Marsh/Folger Dairy Farm
B	Possible Farm House	ca. 1891	Marsh/Folger Dairy Farm
C	Possible Milking Barn	ca. 1891	Marsh/Folger Dairy Farm
D	Possible Ice House	ca. 1891	
E	Utica Club	ca. 1873	Two standing structures, two foundations, one set of footings
F	Carleton Villa	1893	William O. Wyckoff
G	Stanley Cottage	ca. 1876	
H	Edward Wyckoff Cottage	ca. 1890	
I	Williams Cottages	ca. 1876	Foundation to east may also be associated with these cottages
J	Unidentified Foundation	20th c.	No structure is evident at this location in early 20th c. photographs
K	Ferry Dock	ca. 1880	
L	***Remington*** Boathouse	ca. 1893	William O. Wyckoff
M	***Cornell*** Boathouse	ca. 1893	William O. Wyckoff
N	Boathouse	ca. 1900	Modified during early 20th c.
O	Schick Boathouse Foundation	ca. 1900	Fred Schick
P	Modern Boathouses	post 1906	On the site of the ca. 1900 Millar boathouse
Q	Chase Dock Foundation	ca. 1900	Charles Chase
R	Hickory Point Club	various	

appear to be any permanent structure here, and it is likely that the boathouse was always attached to shore by a gangplank. The base of the U measures 7.4 m long, the north arm measures 34 m long, and the south arm measures 40.7 m long. Constructed of square timbers 20-30 cm on a side, the foundation contains a rubble core and is capped with concrete slabs 60 cm thick. Threaded, 2.5 cm diameter iron bars were noted around the dock. These bars likely held the timbers together and possibly secured the upper structure to the foundation.

The 33 m long south arm of the *Remington* boathouse foundation is constructed in a similar fashion. The 22.8 m long north arm of the *Remington* boathouse, however, is constructed of three stone-filled cob-style cribs. Unlike the ferry dock cribs, these cribs are not of the Lincoln Logs type. Instead, the headers and runners are nailed to vertical

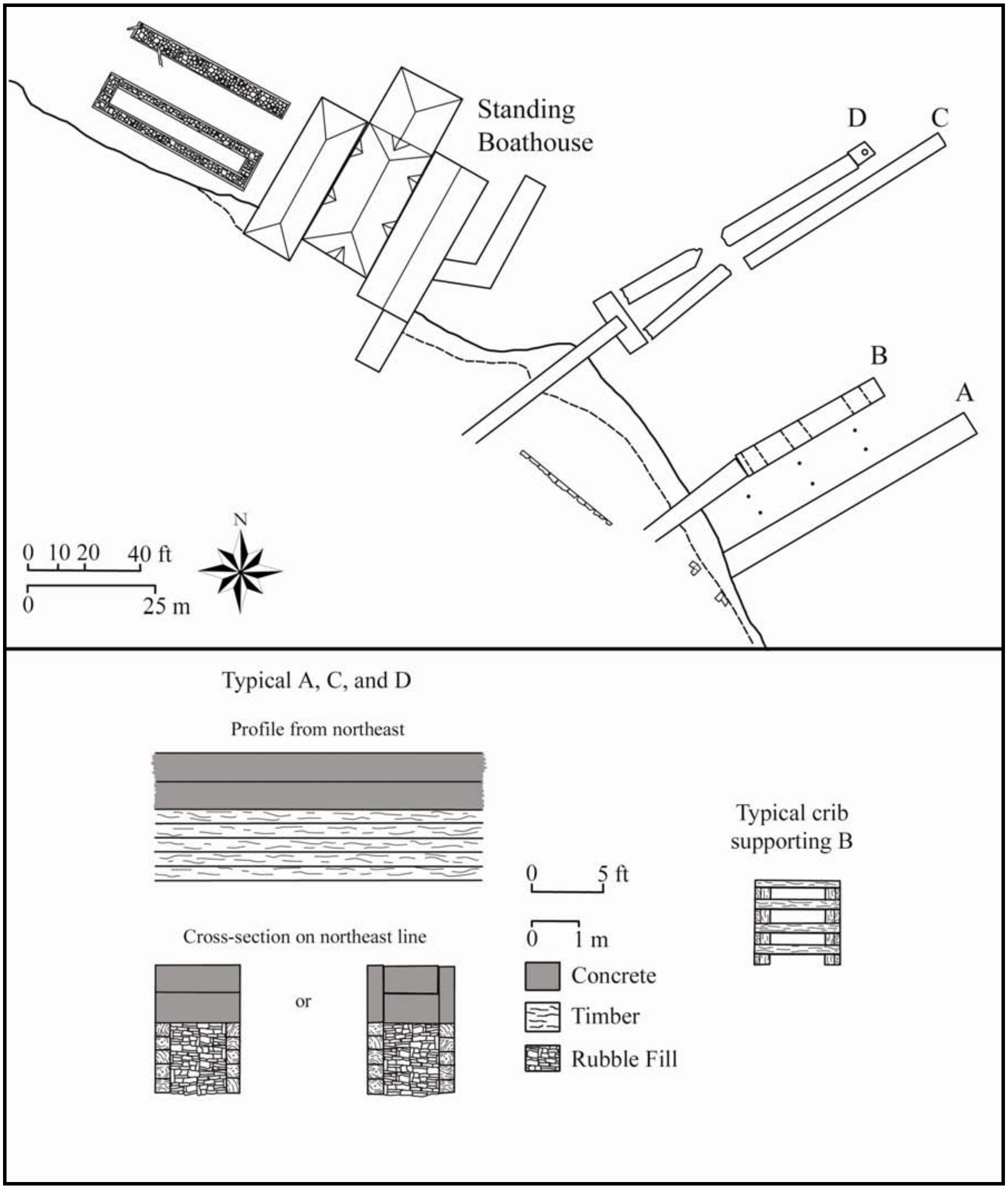

FIGURE A-47. Plan and profiles of Wyckoff boathouse foundations, Carleton Island.

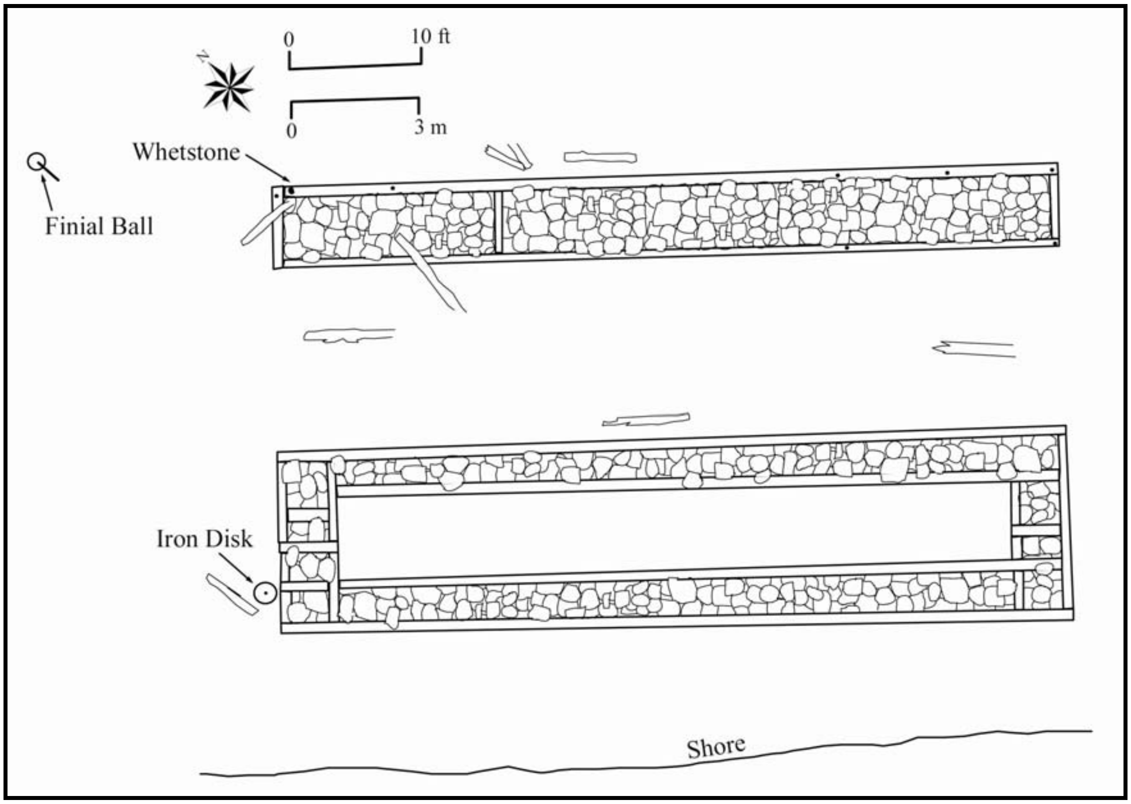

FIGURE A-48. Schick boathouse foundation, Carleton Island.

posts at the corners. All of the timbers used in these cribs are approximately 15 cm square. Steel uprights were noted between the two arms of the ***Remington*** boathouse foundation, likely the remains of a later metal pole dock. The cribs are in a relatively good state of repair, while the concrete foundations are in poorer condition, with the concrete slabs slanted or fallen and much of the timber foundation out of place. A substantial amount of early to mid-20th century debris, as well as mooring blocks, was noted immediately in front of these foundations.

The Schick boathouse foundation consists of an 18.3 x 10.1 m timber and stone foundation that projects approximately 50 cm above the lake bottom (Figure A-48). The shoreward foundation is a 3.9 x 18.3 m rectangle. A second part of the foundation is 3.7 m north and consists of a 1.5 x. 18.3 m timber and stone band. The timber frames are constructed of 15 cm square timbers connected with wire nails and drift bolts. The stones in the shoreward foundation are approximately fist-sized, while the stones in the north foundation are generally 60-90 cm in diameter.

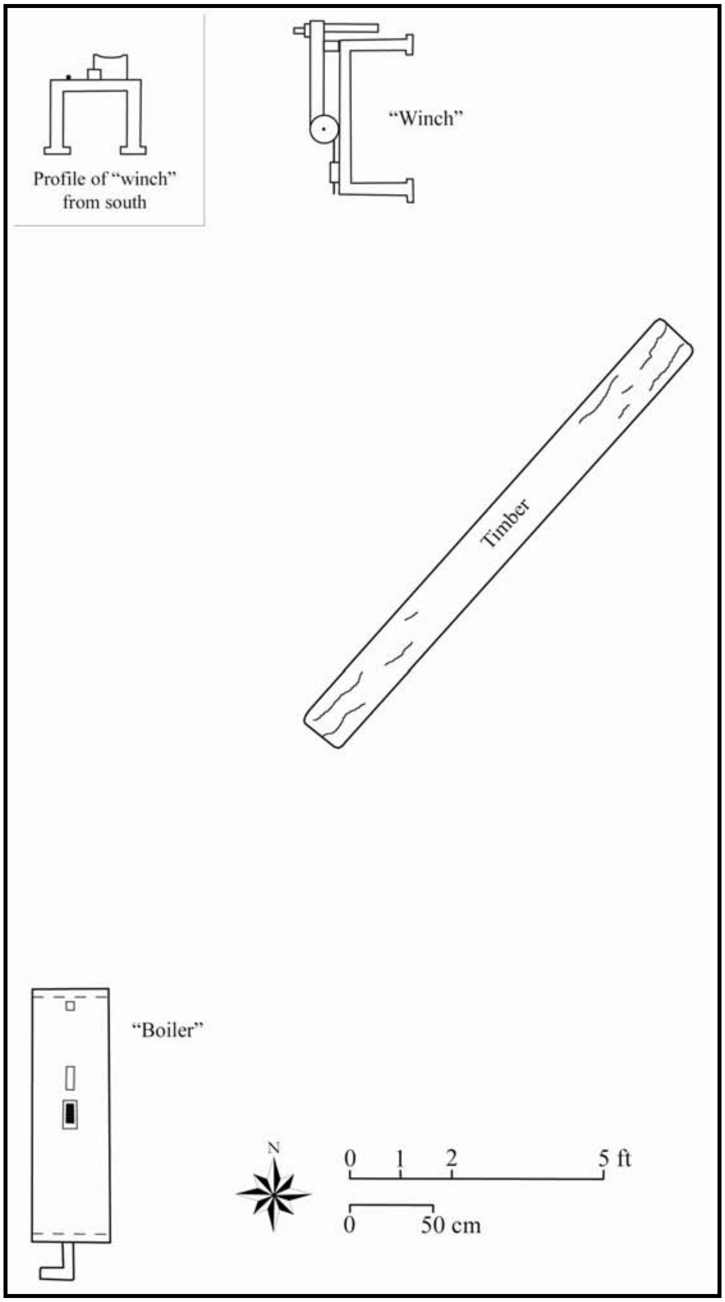

FIGURE A-49. Boiler and possible winch, Carleton Island.

Boiler and Winch

What appear to be a boiler and winch were recorded near the center of South Bay (Figure A-49). The cylindrical boiler measures 0.5 x 1.5 m. The upper surface has a rectangular opening in it and a rectangular box that extends approximately 5 cm above the body of the cylinder. One end of the boiler has a 7.6 cm diameter pipe projecting from it, while the other end appears to be slightly domed. The possible winch is situated 5 m north of the boiler. The winch is badly corroded and encrusted with zebra mussels (*Dreissena polymorpha*), so its details and operation are not clear. A 3.2 m long, 30 cm square timber was also noted to the northeast of the boiler.

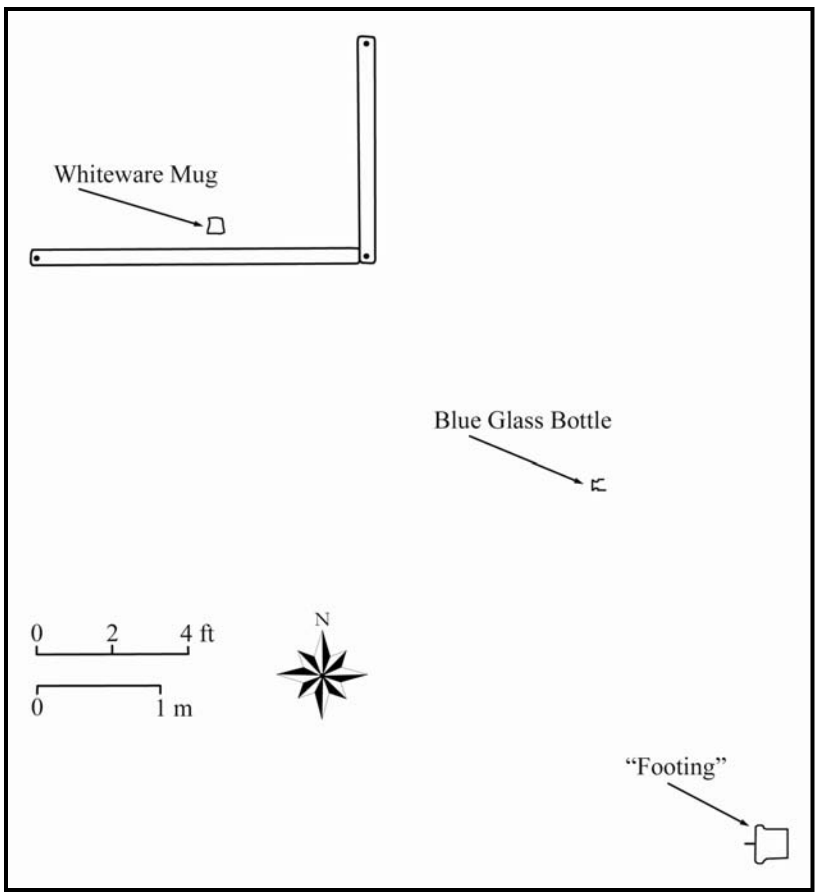

FIGURE A-50. Possible dock fragment, Carleton Island.

Dock Section

A 1.8 x. 2.7 m section of what appears to be cribbing was recorded in South Bay (Figure A-50). The L-shaped fragment is constructed of 14-cm square timber with drift bolts at the corners. There are also what appear to be cut nails imbedded in the wood. Approximately 5.5 m southeast of the cribbing is a cast iron footing attached to a hollow tube. A fragment of a square-sided, blue glass bottle was found between the cribbing and the footing, and a whiteware mug was found immediately adjacent to the cribbing.

Modified Timber

A 9.1 x 0.5 x 0.3 m timber was recorded east of the mouth of South Bay (Figure A-51). The ends of the timber are notched and there is a fastener hole in the east end. The timber may have been part of a relatively substantial crib structure. A 1.2 x .0.6 m piece of badly corroded iron was noted immediately south of the timber.

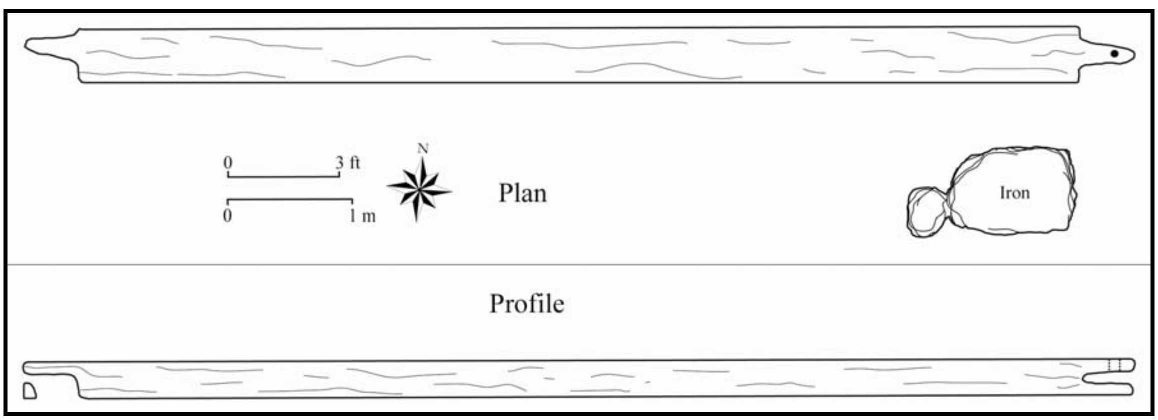

FIGURE A-51. Modified timber, Carleton Island.

Railing

A 1.8 x 0.6 m section of decorative railing was recorded near the center of South Bay (Figure A-52). The railing is constructed of a light cast metal, possibly a tin alloy. The spindles are bolted through the railing itself, and it is likely that a second baluster framed the railing and spindles. Similar pieces of cast metal were noted in the sediments below the railing.

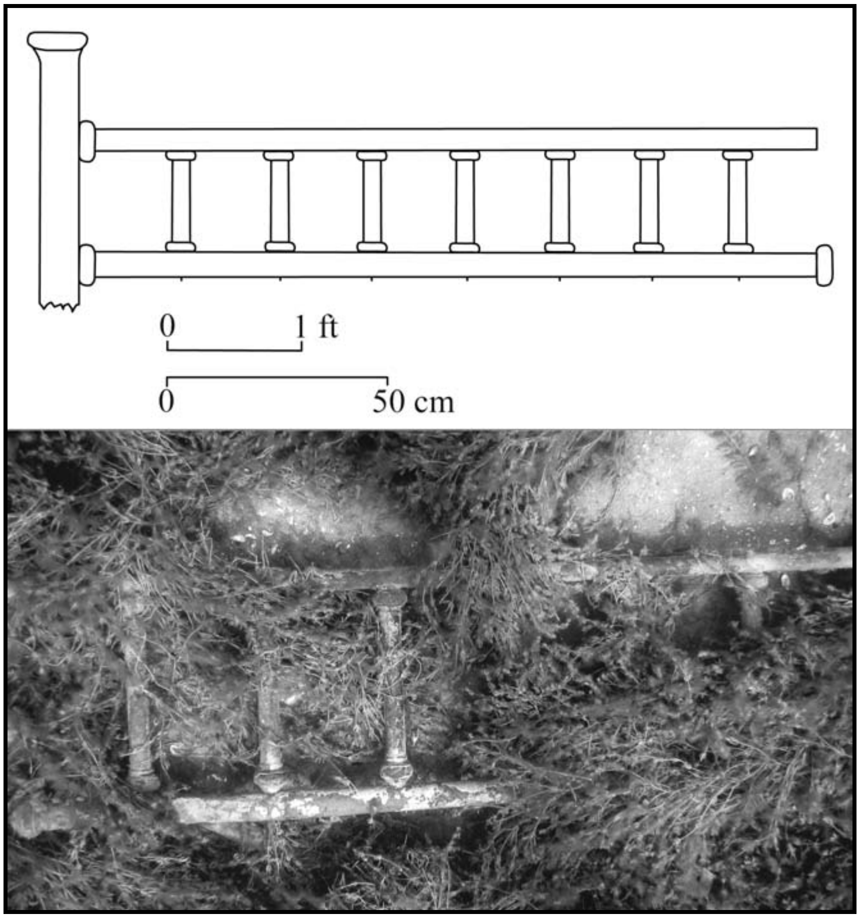

FIGURE A-52. Photograph and drawing of decorative railing, Carleton Island.

Washing Machine

A drum-style washing machine was recorded near the mouth of South Bay.

Iron Box

An approximately 60 x 30 cm rectangular iron box containing stones was noted near South Bay (Figure A-53). The purpose of this box is unknown.

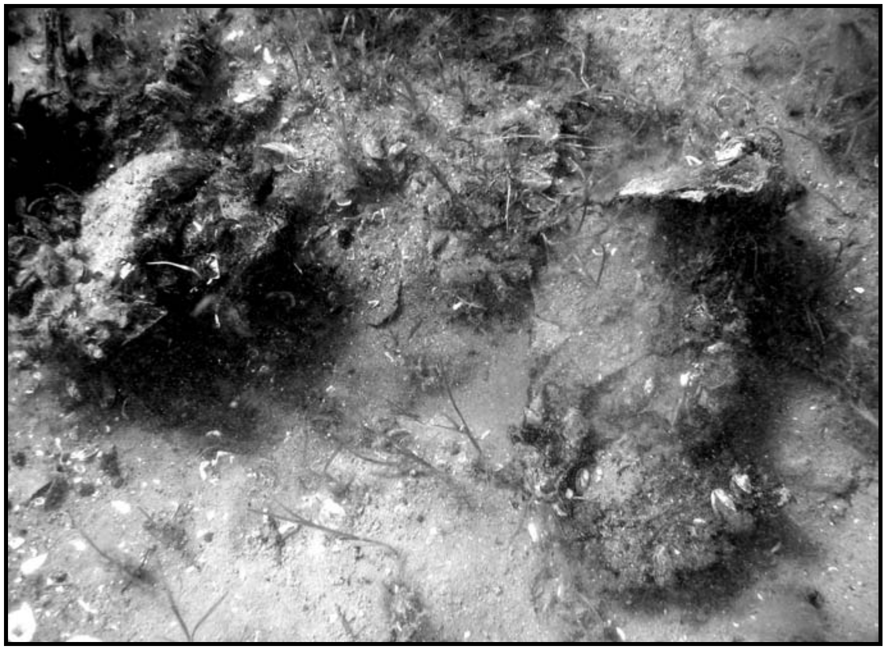
FIGURE A-53. Iron box, Carleton Island.

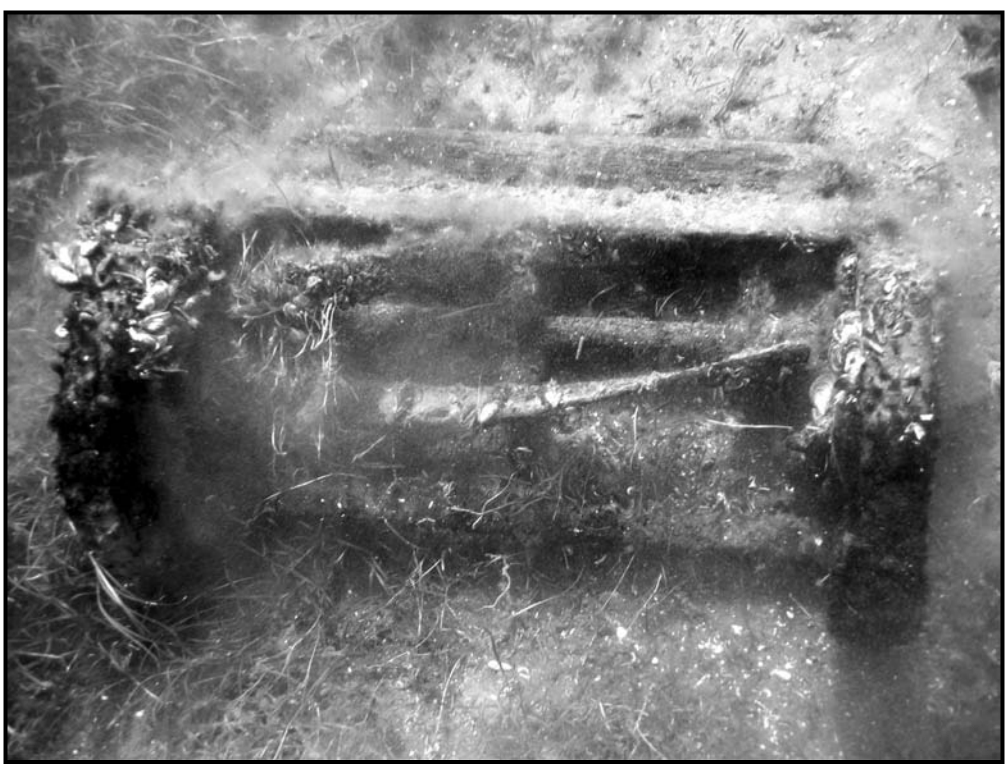
FIGURE A-54. Lawnmower, Carleton Island.

Lawn Mower

A reel lawn mower was recorded near the center of South Bay (Figure A-54).

FIGURE A-55. Finial ball, Carleton Island.

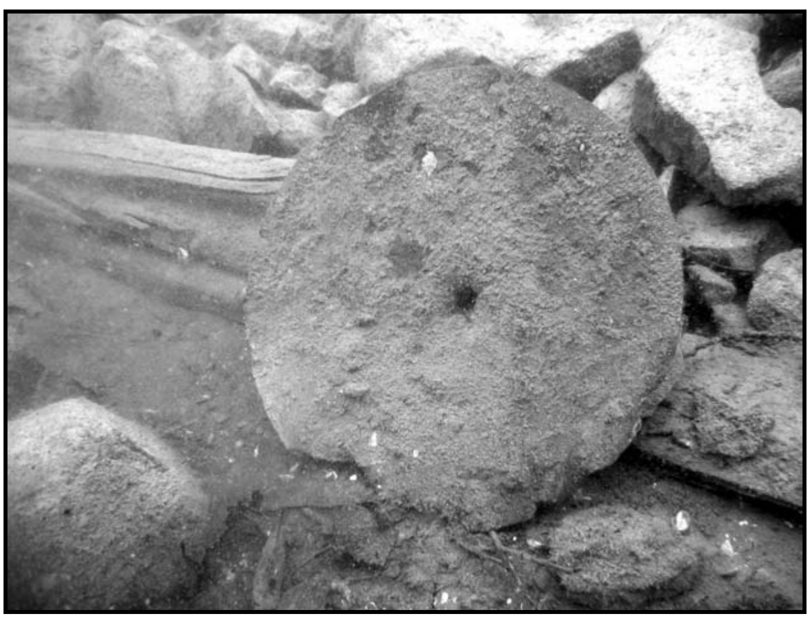

FIGURE A-56. Iron dome possibly associated with finial ball, Carleton Island.

Finial Ball

An approximately 20-cm diameter finial ball was recorded near the Schick boat house foundation (Figure A-55). The ball is made of copper alloy panels and has an approximately 50 cm long iron rod projecting from it. Possibly associated with the final ball is an approximately 60-cm diameter shallow iron dome (Figure A-56). A hole in the center of the dome is approximately the same diameter as the iron rod through the finial ball. The dome was found in close proximity to the ball and the Schick boathouse foundation.

Unidentified Structure (target 5-3)

A horseshoe-shaped piece of wood was identified south of South Bay. A straight piece of wood that continued the curve is attached to the horseshoe. The entire structure is approximately 4.6 m long.

Unidentified Structure (target 5-48)

A 4.6 x 2.4 m wood frame was noted south of Carleton Island. The purpose of the frame is unknown, but it may be a dock fragment. A Danforth anchor is wedged into one end of the structure. The anchor was likely snagged after the structure came to rest on the bottom.

Unidentified Timber

An L-shaped 91 x 91 cm piece of notched wood was identified south of Carleton Island (Figure A-57). The timber is shaped like a knee, but its original purpose is unknown.

Decorative Piece

An approximately 60 x 60 cm decorative light metal frame was noted south of South Bay. The artifact is badly corroded but appeared to include a claw grasping a cracked glass or crystal globe.

FIGURE A-57. Unidentified L-shaped timber, Carleton Island.

Timber

A 4.6 m long timber was noted south of Carleton Island. This timber appeared to be unmodified and may date to the early 19th century when Carleton Island was a timber station. A smaller piece of wood, approximately 1 m long, was noted lying parallel to the timber.

Bed Frame

An approximately double-size bed frame was noted south of Carleton Island.

Shore Dump

A small deposit of early to mid-20th century trash and bricks was noted along the shore near the back of South Bay. The trash consisted primarily of cans and a few bottles.

Iron Hoops

Four iron hoops resembling barrel hoops were noted just off shore near the back of South Bay.

South Bay Trash

Discarded artifacts were noted throughout South Bay. These artifacts include bottles, cans, painted linoleum, an enameled pitcher, a kettle with bail, and a few fragments of whiteware. These artifacts all appear to date to the late 19th and 20th centuries.

TABLE A-7
SUMMARY OF WOLFE ISLAND ARCHAEOLOGICAL RESULTS

Site	**Easting**	**Northing**	**Method**	**Date**	**Type**
French Site	384807	4895823	Informant Interview	18th c.	Domestic?
Dawson Dock	385091	4894571	Side-Scan Sonar/ Informant Interview	19th c.	Commercial
Davis Dock	385334	4894595	Side-Scan Sonar/ Kayak Survey	19th c.	Commercial
Stove door	385146	4894789	Side-Scan Sonar	19th c.?	Domestic
Truck Chassis	385521	4894927	Side-Scan Sonar	20th c.	Recreational
Keyes Wreck	385085	4894630	Side-Scan Sonar/ Informant Interview	19th/20th c.	Commercial
Milne Foundation	386483	4894926	Informant Interview/ Pedestrian Survey	19th c.	Commercial
Weatherall Site	386530	4895254	Pedestrian Survey	19th c.	Domestic
MacDonald Site	386295	4895401	Pedestrian Survey	Archaic	Domestic

Wolfe Island (Area 6)

MacDonald Site

Finds from the MacDonald Site, situated on the north side of Barrett Bay, consist of an Archaic projectile point in loose association with two bifaces, and a fire-cracked rock. All of these were located within 465 m of each other. The southeast biface, found in association with several historic artifacts (see Weatherall Site below) approximately 35 m from the shore, measures 6 cm long, 3.5 cm wide, and 1.5 cm thick and appears to

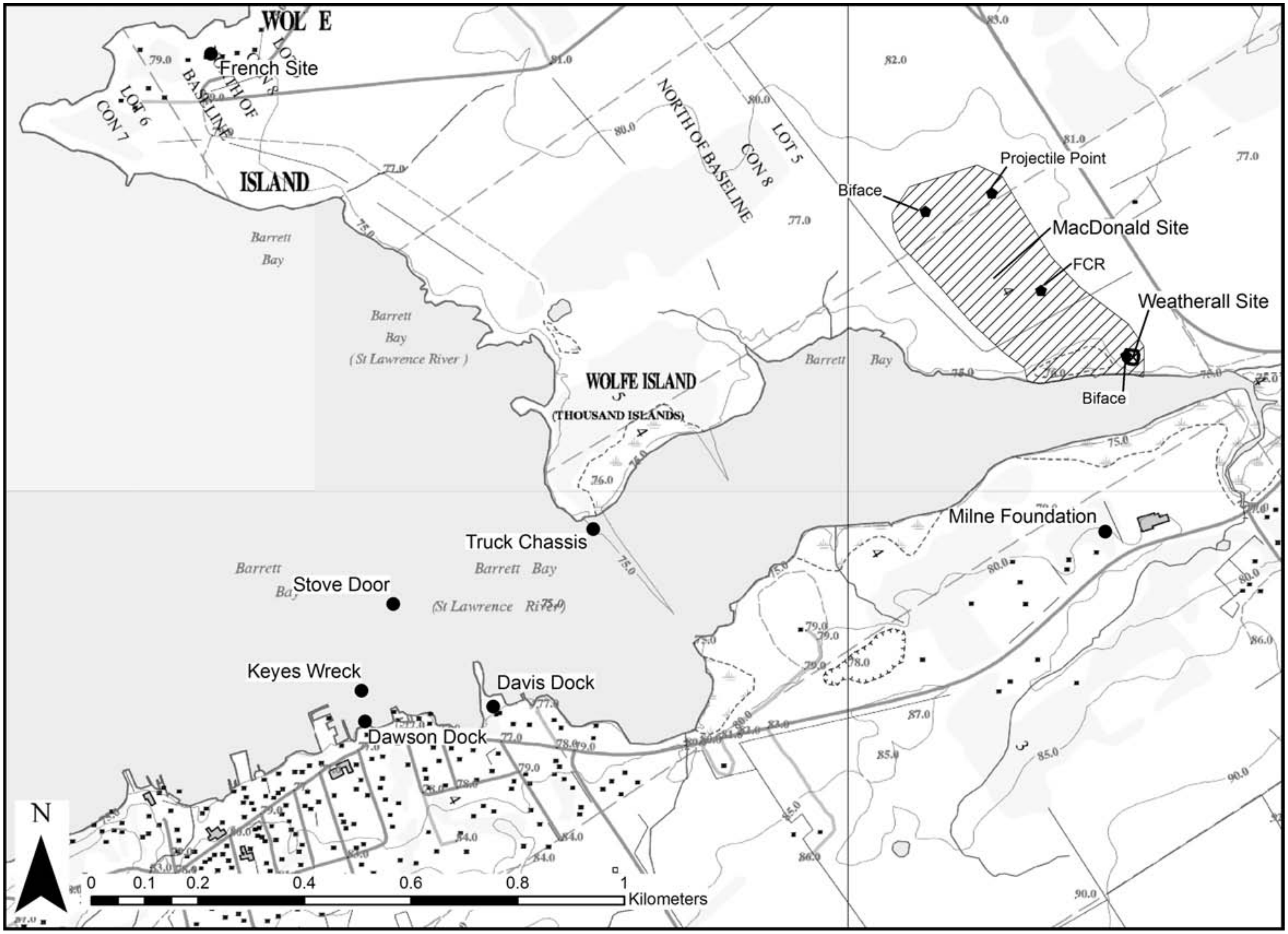

FIGURE A-58. Summary of Wolfe Island archaeological results.

FIGURE A-59. Possible scraper, MacDonald Site, Wolfe Island.

FIGURE A-60. Possible biface, MacDonald Site, Wolfe Island.

be a scraper (Figure A-59). The second biface is less identifiable (Figure A-60). The artifact shows evidence of chipping along its edges, but the poor knapping characteristics of the material and the presence of natural cleavage planes on at least one edge make a definitive identification of the artifact as a biface difficult. It measures 2.5 cm long, 1.5 cm wide, and 0.3 cm thick. This biface was found 237 m from the waterline. Situated between the two bifaces and equidistant between the waterline and Route 7051 (170 m) is an isolated fragment of fire cracked sedimentary rock (likely limestone). The final artifact defining the site is a projectile point made of unidentified, gray, Onondaga-like chert found 336 m from the waterline. The base of the point is missing, but the extant portion measures 3.7 cm long, 3.2 cm wide, and 0.7 cm thick. The artifact is difficult to identify due to the missing base but it appears to be Archaic (7500–1200 BP) and may be a Brewerton Corner-Notched point (fl. 3500–2500 BP) (Ritchie 1971).

French Site

Related informants (Donald Bayne and Arthur Britton Smith) reported finding a 1725 French Coin and several “hand blown” bottles on the north side of Ferguson Point.

Weatherall Site

Clustered around the southeast biface of the MacDonald Site is a scatter of historic period artifacts dating to the first half of the 19th century (Figure A-61). The scatter is approximately 30 m in diameter and centered 35 m from the shore. These artifacts include approximately 15 ceramic fragments and glass shards, as well as a pipe bowl and an unidentified iron fragment. The ceramics included pearlware (ca. 1780–1820) and whiteware (post 1820) decorated with transfer-printed and shell edge motifs (Hume 1991). Both blue and dark brown transfer prints were noted in styles that, while fragmentary, appear to date to the early 19th century. Similarly, blue shell-edged pearlware was popular during the late 18th and early 19th centuries (Copeland 2000). One shard of hand-blown dark green glass was also found in close proximity to the ceramic fragments. A second glass shard was found 165 m to the west. This piece was of

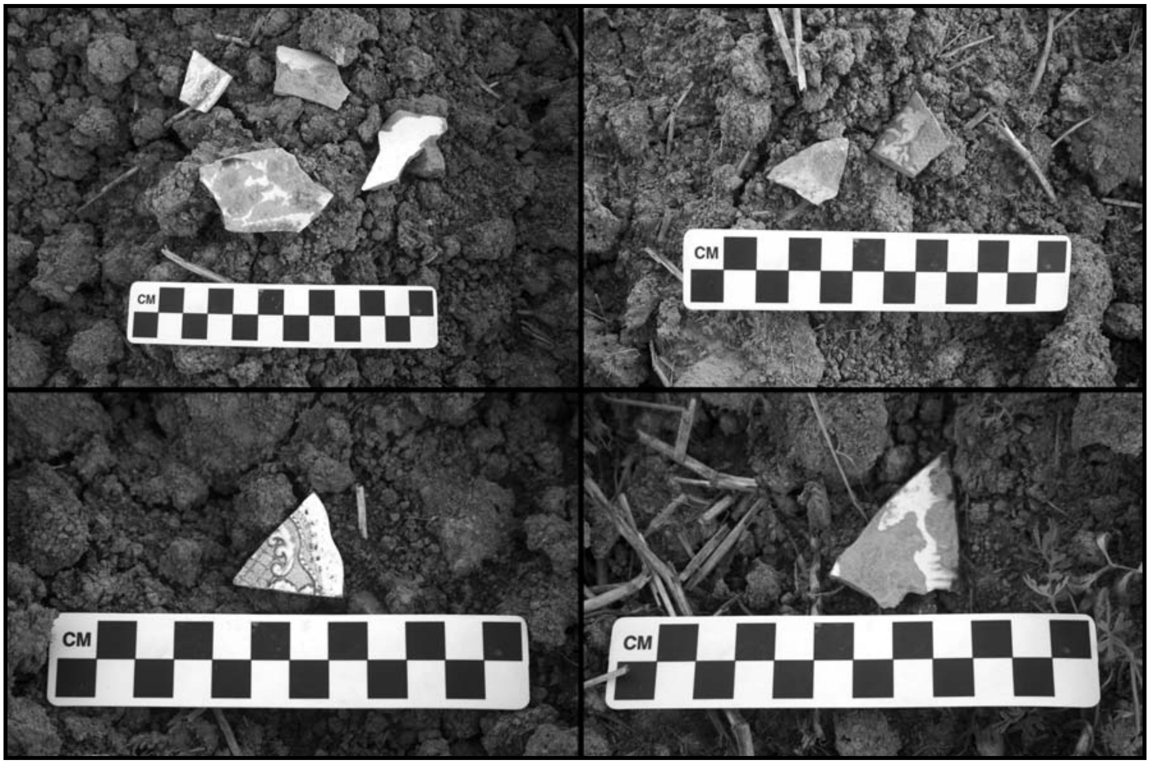

FIGURE A-61. Representative artifacts from the Weatherall Site, Wolfe Island.

clear glass marked with a “D” within a diamond. This mark is associated with the Dominion Glass Company of Montreal and Quebec and post-dates 1928. Given the distance and time separating this artifact from the others it is likely that it represents a separate deposition. An intact pipe bowl was also noted in close association with the 19th-century artifact scatter. The bowl was embossed with a fully-rigged ship on one side and an anchor and cable on the other. The shape and style of decoration of the pipe were common during the late 18th century and first half of the 19th century, suggesting that the pipe, as well as the majority of the ceramics and glass fragments were deposited during the early 19th century. No architectural or structural remains were noted in association with the artifact scatter. Consequently, it is unlikely, but not impossible, that the Weatherall Site is the remains of a structure.

Milne Foundation

The Milne Foundation is a shallow stone-lined foundation identified south of Barrett Bay (182 m) and west of the Kraft factory (65 m) as a result of information from Ian Milne, who then owned the property. The foundation, which measures 12.5 m east-west and 4.5 m north-south, is bounded by an approximately 0.6 m high partly-dressed, dry-laid limestone wall on the north, south, and west sides but is open to the east. South of the foundation is a large flat-topped berm extending from Highway 96 to the foundation and approximately 2.5 m above the foundation. A smaller berm, approximately 1.5 m higher than the foundation is situated north of the structure. The two berms give the foundation the appearance of having been excavated, but its base is likely at, or near, the original ground surface.

Milne partly excavated the foundation and covered the interior with crushed stone. While conducting this work, he recovered a large strap hinge, a water pump, and a lamp reflector. These artifacts suggest that the foundation was in use during the early 20th century but its origins are unknown and may extend into the 19th century.

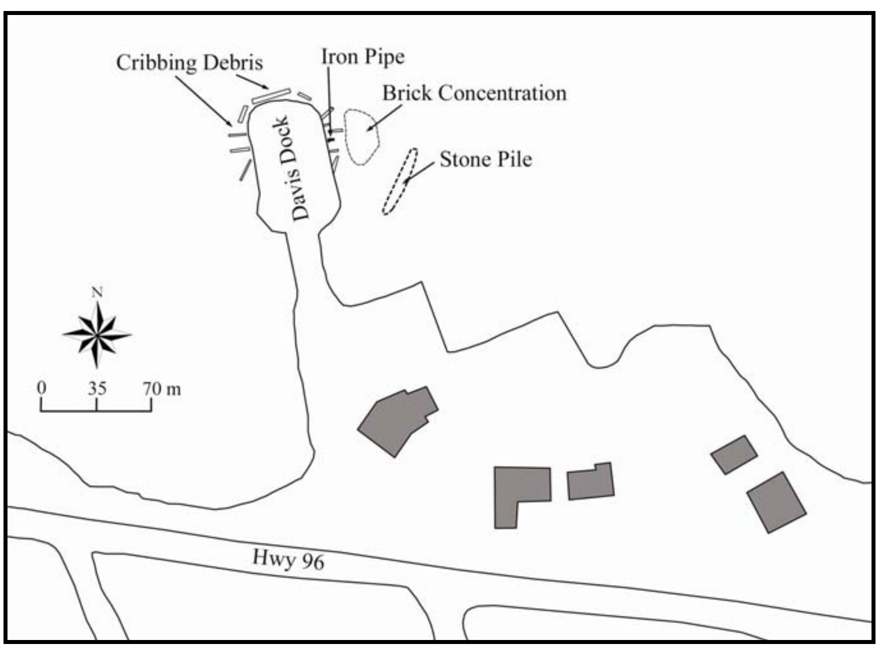

FIGURE A-62. Davis Dock, Wolfe Island.

Davis Dock

The Davis Dock, also known as the Going Dock and Hogan Dock, extends approximately 115 m into Barrett Bay and is 23 m wide at its head (Figure A-62). The dock is constructed of large-aggregate concrete and 40 cm square wood cribbing filled with stone and initially capped with rock later followed by concrete slabs. The cribbing is fastened with 4-5 cm diameter bolts. A wide variety of cast iron pipes, metal rods, and timbers project from the dock in different directions. East of the dock lies a concentration of bricks and coal. The remains of a possible earlier dock are situated immediately east of the current Davis Dock. These remains consist of a low and diffuse pile of stones that runs at an oblique angle to the shore.

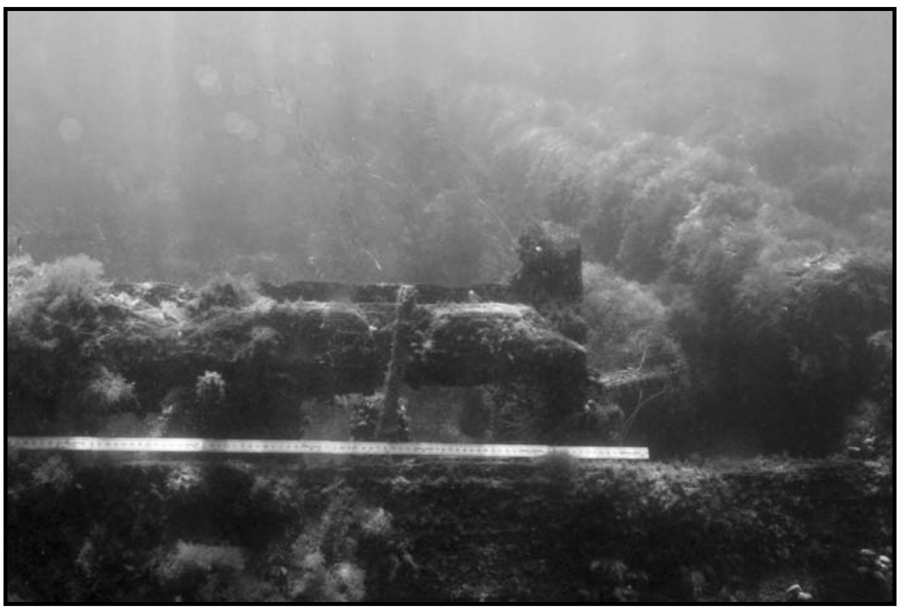

FIGURE A-63. The east side of the Dawson Dock with the Keyes Wreck in the foreground, Wolfe Island. View towards the south.

Dawson Dock

The Dawson Dock, west of the Davis Dock, is badly deteriorated and exists as a low mound of rocks leading approximately 80 m from shore towards a small (8 x 8 m) island of stone that is partly framed by fallen cribbing timbers (Figure A-63). The stones associated with the dock are generally oval in shape and 20 cm to 60 cm in diameter. The extant cribbing timbers are round in section, 30 cm in diameter, and appeared to be of soft wood.

Keyes Wreck

The remains of the Keyes Wreck are situated in approximately 4 m of water contiguous with the Dawson Dock head at an angle of approximately 260°. The dock cribbing and barge timbers are intermingled in some locations and stone from the dock has fallen into the hull. The vessel measures approximately 41.7 m (136.8 ft) between perpendiculars and 8 m (26.2 ft) in beam. It is double ended and has a relatively graceful curve leading back from the bow to the maximum beam, approximately one quarter of the way from each end. Its last cargo is still evident as coal lying inside of the hull. The remains are largely intact, with the hull complete to the turn of the bilge and the detached starboard side lying on the silty bottom adjacent to the hull. The remains are nearly covered with zebra mussels (*Dreissena polymorpha*) and vegetation, making it difficult to ascertain details. Despite these obstructions, it was noted that the hull was built of 5 x 15 cm (2 x 6 in) exterior planking and 3 x 10 cm (1.2 x 4 in) ceiling planking attached with iron nails and bolts to 20 cm (7.9 in) molded and 10 cm (4 in) sided frames. The frames appear to be made of single futtocks. The attitude of the wreck on the lake floor suggests that it is nearly flat bottomed, a common characteristic of lake vessels, which often had as little as 46 cm (18 in) of deadrise. The east end of the vessel is interpreted as the stern due to the straight post at this end. The tops of both the internal and external stern posts are dished longitudinally. At the opposite end, the stem and a gripe lay to the side of the vessel at a 45° angle. It appears that the stem was originally attached to the keelson by a 70 cm (27.6 in) long flat scarf. A section of the apron is attached to the keelson immediately aft of the stem and other possible apron timbers are lying just to port. The keelson measures 30 cm (11.8 in) square and is flanked by two 30 cm (11.8 in) square sister keelsons in the aft quarter. Additionally, the spine of the vessel is reinforced with a buttressed 46 cm (18.1 in) square timber on top of the keelson off-set to the stern of the vessel and with an additional 30 cm (11.8 in) square rider keelson and iron braces closer to the bow. A gap in the keelson and a pipe protruding from the keelson were also noted. The vessel is reinforced athwartship by paired riders at either end. These riders are constructed of two timbers each and measure 70 cm (27.6 in) sided and nearly 1 m (39.4 in) molded. Notably, the ends of the riders are cut to fit the bilges of the vessel. The aft athwartship riders contain several iron pins, some of which appear to be threaded, and holes that likely contained pins at one time. Similar pins also project from the sediment abaft of the aft rider. Fasteners throughout the vessel are iron drift bolts for structural members and iron nails and occasionally bolts for planking. This heavy reliance on iron fasteners, rather than treenails, was common on the Great Lakes, where iron was more abundant than it was in other shipbuilding regions.

The detached starboard side of the vessel is adjacent to the hull. The dimensions of this section suggest that the vessel once had a depth of hold slightly less than 4 m (13.1 ft). The side is flat or nearly flat and has several approximately 30 cm (11.8 in) square holes cut in the upper strakes. Immediately above these holes is the remains of a gangway that is supported by hanging knees and bolted to the frames. Above the gangway there appears to be an open railing. However, several iron fasteners projecting from the silt suggest that there may have been additional planking outside of the railing.

Truck Chassis

The submerged remains of a vehicle were identified along the north shore of Barrett Bay (Figure A-64). The remains include the chassis, drive train, transmission, gas tank, a tire, and a door handle. What appeared to be deer bones were also found near the vehicle. An informant (George Merry) stated that the chassis belonged to a truck that was used as a hunting blind during the mid to late 20th century.

Stove Door

A cast iron stove door was identified off the east shore of Barrett Bay (Figure A-65).

FIGURE A-64. Truck chassis transmission, Wolfe Island.

FIGURE A-65. Stove door, Wolfe Island.

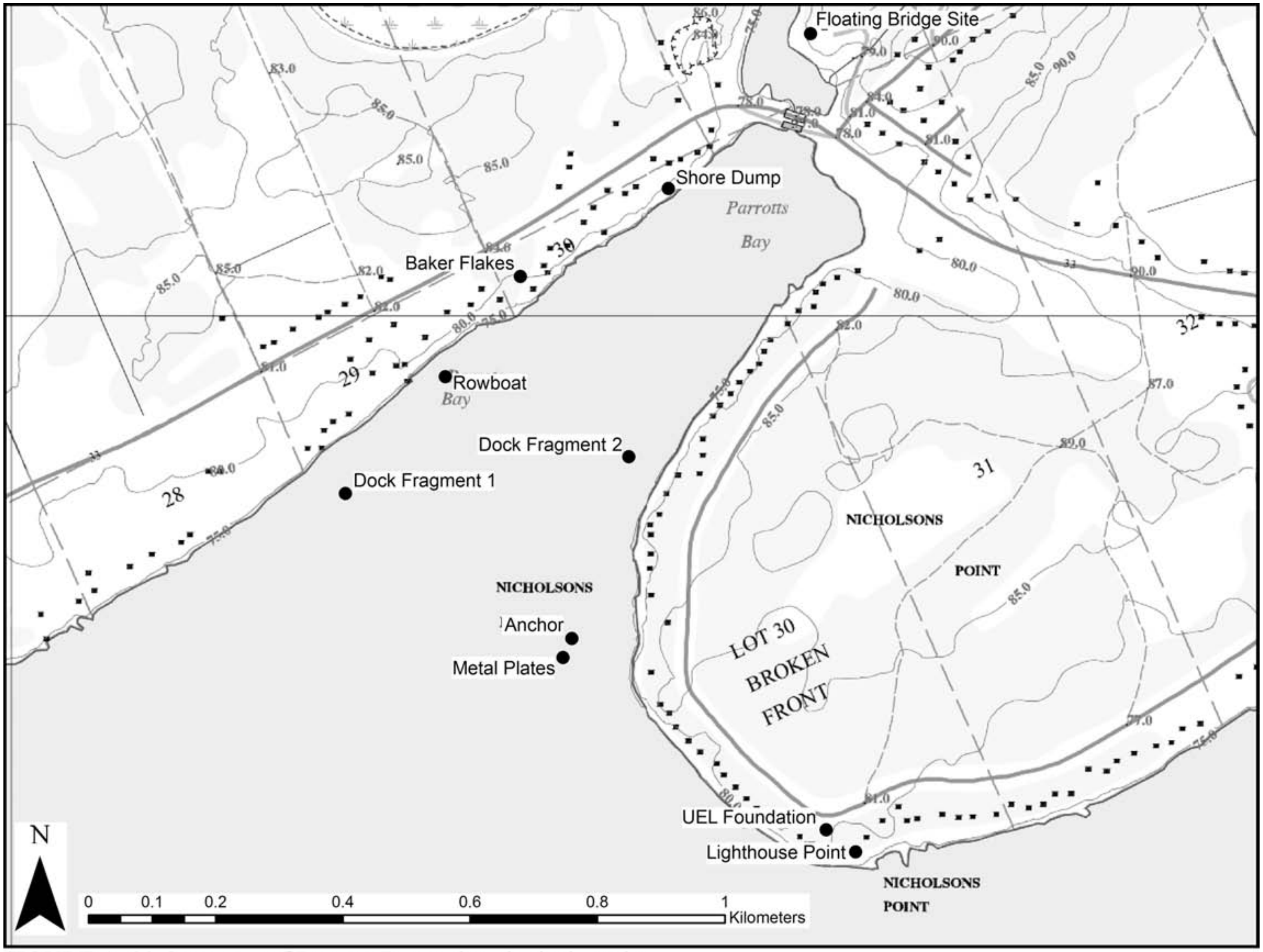

FIGURE A-66. Summary of Parrotts Bay archaeological results.

TABLE A-8
SUMMARY OF PARROTTS BAY ARCHAEOLOGICAL RESULTS

Site	Easting	Northing	Method	Date	Type
Rowboat	364680	4896908	Side-Scan Sonar	20th c.	Recreational
Dock Fragments 1	364535	4896723	Side-Scan Sonar	20th c.	Recreational
Dock Fragment 2	364965	4896787	Side-Scan Sonar	20th c.	Recreational
Anchor	364876	4896497	Magnetometer	20th c.	Recreational
Metal Plates (2)	364867	4896469	Magnetometer	20th c.	Domestic
Floating Bridge	365256	4897453	Informant Interview	17th c.	Domestic
UEL Foundation	365284	4896198	Informant Interview	18th/19th c.	Domestic
Shore Dump	365032	4897207	Informant Interview	19th c.	Domestic
Lighthouse Point	365326	4896161	Informant Interview	Pre-Contact	Domestic?
Baker Flakes	364798	4897065	Informant Interview	Pre-Contact	Unknown

Parrotts Bay (Area 7)

Lighthouse Point Site

An informant (Reginald Parks) reported finding Native American artifacts within Lighthouse Park. The collection was not available for inspection.

Baker Flakes

An informant (John Craig) reported finding stone flakes on his property (the former Colonel Baker property). He was unable to produce these flakes for archaeological inspection.

Floating Bridge Site

Artifacts including French trade seals, mirror glass, bottles, buttons, gun flints, burned food remains, and clay pipes have been reportedly collected from the upper reaches of Parrotts Bay, north of the bridge. These materials were not available for inspection, and the site has not been registered with the Ontario Ministry of Culture.

United Empire Loyalist Foundation

An informant (Reginald Parks) reported an approximately 1.5 m deep stone foundation on his property. The foundation was purportedly between his current home and Nicholson Point Road. He used the foundation to hold his septic system and filled it. The attribution of the foundation to a United Empire Loyalist home was made by the informant.

Shore Dump

An informant (Joseph Carty) reported finding glass and ceramic debris along the shore when he constructed his home. The materials were not saved.

Rowboat

An approximately 3-m long rowboat was identified in the course of the remote sensing survey within Parrotts Bay. The wooden vessel has a sharp bow and flat transom that measures approximately 1 m across. Due to the depth of sediment around the boat and the presence of geothermal lines running across the wreck, it is unlikely that the boat was lost during recent years. Construction features of the vessel, including the use of wire nails, however, are consistent with boats built during the last century. It is likely that the rowboat is associated with the boom in construction around Parrotts Bay after World War II.

Anchor

An approximately 60 cm long Danforth-type anchor was noted within Parrotts Bay.

Dock Fragments

Two fragments of docks were found within Parrotts Bay. One of the dock fragments is a section of steel dock frame measuring 1.5 X 0.8 m. The second dock fragment consists of two steel dock anchoring bars forming a V. Both fragments of dock were likely demolished by ice and deposited on the bay floor as the ice withdrew.

Metal Plates

Two steel plates were found within 30 cm of each other. Both plates are approximately 6.4 mm thick and 30 cm on a side. It is unclear how the plates were deposited on the bay floor, but they may have been lost or dumped from a passing pleasure boat.

VITA

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